FL20 / FL14

FLEX-WING MECHANICAL LEVEL LIFT ROTARY CUTTER /SHREDDER

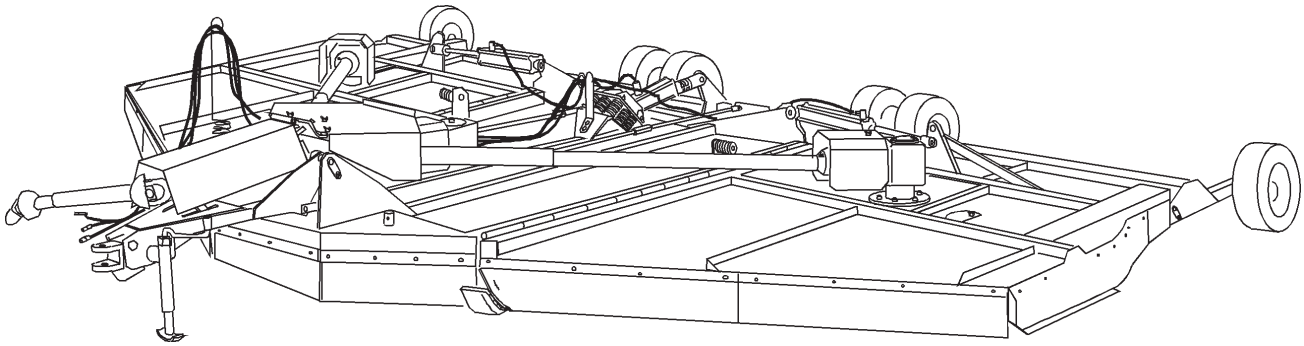
Published 10/03 Effective Serial No. FL 11400 Through Current P/N 00766693C

OPERATOR'S MANUAL

This Operator's Manual is an integral part of the safe operation of this machine and must be maintained with the unit at all times. READ, UNDERSTAND, and FOLLOW the Safety and Operation Instructions contained in this manual before operating the equipment.

ATTENCIÓN! LEA EL INSTRUCTIVO

Si No Lee Ingles, Pida Ayuda a Alguien Que Si Lo Lea Para Que le Traduzca las Medidas de Seguridad.



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MEMBER OF THE ALAMO GROUP
ALWAYS ON THE CUTTING EDGE

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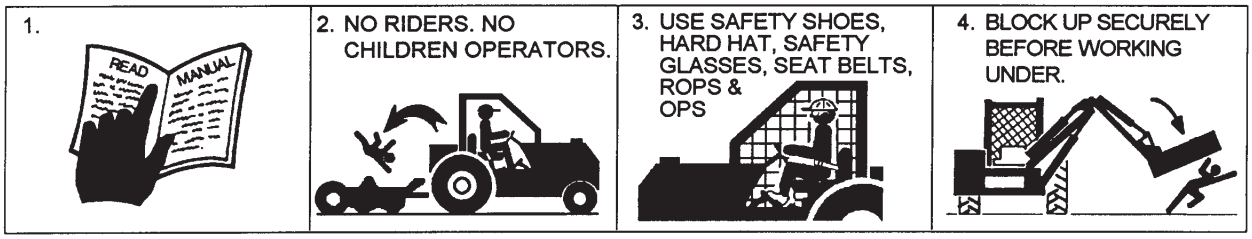
TO THE OWNER/OPERATOR/DEALER

All implements with moving parts are potentially hazardous. There is no substitute for a cautious, safe-minded operator who recognizes the potential hazards and follows reasonable safety practices. The manufacturer has designed this implement to be used with all its safety equipment properly attached to minimize the chance of accidents.

BEFORE YOU START!! Read the safety messages on the implement and shown in your manual. Observe the rules of safety and common sense!

DANGER

FAILING TO FOLLOW SAFETY MESSAGES AND OPERATING INSTRUCTIONS CAN CAUSE SERIOUS BODILY INJURY OR EVEN DEATH TO OPERATOR AND OTHERS IN THE AREA.


1.
READ
MANUAL
2. NO RIDERS. NO CHILDREN OPERATORS.
3. USE SAFETY SHOES, HARD HAT, SAFETY GLASSES, SEAT BELTS, ROPS & OPS
4. BLOCK UP SECURELY BEFORE WORKING UNDER.

1. Study and understand Operator's Manuals, Safety Decals, and Instructional Decals for tractor and implement to prevent misuse, abuse, and accidents. Practice before operating in a confined area or near passersby.
- Learn how to stop engine suddenly in an emergency. Be alert for passersby and especially children

2. Allow no children on or near folding mower or tractor. Allow no riders on tractor or implement. Falling off may cause serious injury or death from being run over by tractor or mower or contact with rotating blades.

3. Operate only with tractor having Roll-Over Protective Structure (ROPS) and with seat belt securely fastened to prevent injury and possible death from falling off or tractor overturn.
- Personal Protective Equipment such as Hard Hat, Safety Glasses, Safety Shoes, & Ear Plugs are recommended.

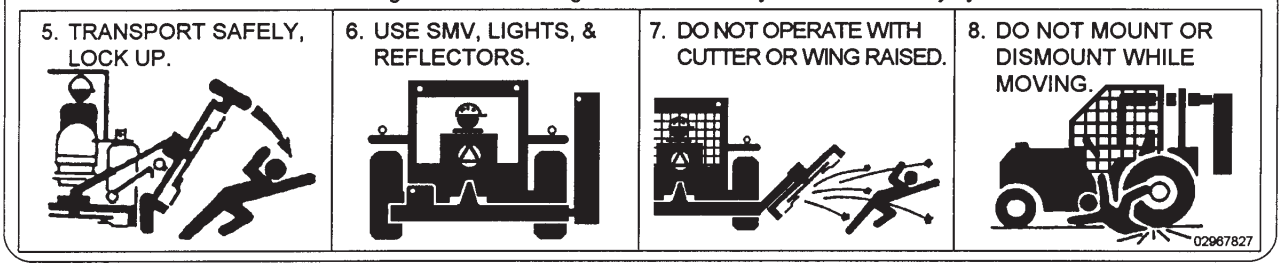
4. Block up or support raised machine and all lifted components securely before putting hands or feet under or working underneath any lifted component to prevent crushing injury or death from sudden dropping or inadvertent operation of controls. Make certain area is clear before lowering or folding

5. Before transporting, put Lift Lever in detent or full-lift position. Install Transport Safety Devices securely on folding mowers. Put Booms securely in Transport Rest.
- Folding and Boom Mowers have raised center of gravity. Slow down when turning and on hillsides.

6. Make certain that SMV sign, warning lights, and reflectors are clearly visible. Follow local traffic codes.

7. Never operate with Cutting Head or Folding Section raised if passersby, bystanders, or traffic are in the area to reduce possibility of injury or death from objects thrown by Blades under Guards or mower structure.

8. Before dismounting, secure implement in transport position or lower to ground.
- Put tractor in park or set brake, disengage PTO, stop engine, remove key, and wait until noise of rotation has ceased to prevent crushing by entanglement in rotating parts which could cause injury or death.
- Never mount or dismount a moving vehicle. Crushing from runover may cause serious injury or death.


5. TRANSPORT SAFELY, LOCK UP.
6. USE SMV, LIGHTS, & REFLECTORS.
7. DO NOT OPERATE WITH CUTTER OR WING RAISED.
8. DO NOT MOUNT OR DISMOUNT WHILE MOVING.
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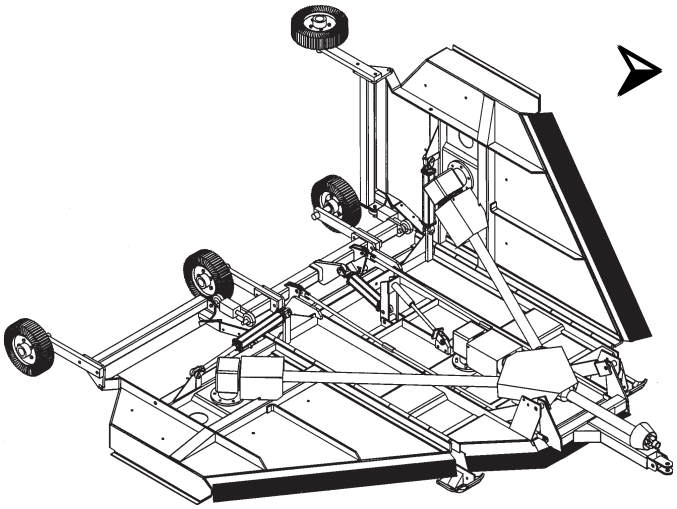
WARRANTY INFORMATION:

Read and understand the complete Warranty Statement found in this Manual. Fill out the Warranty Registration Form in full and return it within 30 Days. Make certain the Serial Number of the Machine is recorded on the Warranty Card and on the Warranty Form that you retain. The use of "will-fit" parts will void your warranty and can cause catastrophic failure with possible injury or death.

➢ BE SAFE!



➢ BE ALERT!

➢ BE ALIVE!

➢ BE TRAINED before operating the Mower!

RHINO M&W FUERST

Safety Training Makes the Difference

In order to reduce accidents and enhance the safe operation of mowers, *Alamo Group Ag Division*, in cooperation with other industry manufacturers has developed the AEM/FEMA Industrial and Agricultural Mower Safety Practices video and guide book.

The video will familiarize and instruct mower-tractor operators in safe practices when using industrial and agricultural mowing equipment. It is important that Every Mower Operator be educated in the operation of their mowing equipment and be able to recognize the potential hazards that can occur while operating a mower. This video, along with the mower operator's manual and the warning messages on the mower, will significantly assist in this important education.

Your Authorized *Alamo Ag* Dealer may have shown this video and presented you a DVD Video when you purchased your mower. If you or any mower operator have not seen this video, **Watch** the **Video, Read** this **Operator's Manual,** and **Complete** the **Video Guidebook** before operating your new mower. If you do not understand any of the instructions included in the video or operator's manual or if you have any questions concerning safety of operation, contact your supervisor, dealer or *Alamo Group Ag*.

If you would like a VHS video tape of the video, please email AEMVideo@alamo-group.com or Fax AEM VHS Video at (830) 372-9529 or mail in a completed copy of the form on the back of this page to AEM VHS Video 1502 E Walnut Street, Seguin, TX 78155. and request the VHS video version. Please include your name, mailing address, mower model and serial number.

Every operator should be trained for each piece of equipment (Tractor and Mower), understand the intended use, and the potential hazards before operating the equipment.

Alamo Group Ag. Division is willing to provide one (1) AEM Mower Safety Practices Video

Please Send Me:

- ☐ VHS Format – AEM/FEMA Mower Operator Safety Video
- ☐ DVD Format – AEM/FEMA Mower Operator Safety Video
- ☐ Mower Operator's Manual
- ☐ AEM Mower Operator's Safety Manual

Requester Name: _____ Phone: _____

Requester Address: _____

_____

City _____

State _____

Zip Code _____

Mower Model: _____ Serial Number: _____

Date Purchased: _____ Dealer Salesperson: _____

Dealership Name: _____ Dealership Location: _____

Mail to:

AEM Video Services
1502 E Walnut street
Seguin, TX 78155

Or Fax to:

(830) 372-9529

Or Email to:

AEMVideo@alamo-group.com

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SAFETY SECTION

SAFETY

A safe and careful operator is the best operator. Safety is of primary importance to the manufacturer and should be to the owner/operator. Most accidents can be avoided by being aware of your equipment, your surroundings, and observing certain precautions. The first section of this manual includes a list of Safety Messages that, if followed, will help protect the operator and bystanders from injury or death. Read and understand these Safety Messages before assembling, operating or servicing this implement. This equipment should only be operated by those persons who have read the Manual, who are responsible and trained, and who know how to do so safely and responsibly.

The Safety Alert Symbol combined with a Signal Word, as seen below, is used throughout this manual and on decals which are attached to the equipment. The Safety Alert Symbol means: **"ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!"** The Symbol and Signal Word are intended to warn the owner/operator of impending hazards and the degree of possible injury faced when operating this equipment..

Practice all usual and customary safe working precautions and above all---remember safety is up to <u>YOU</u>. Only <u>YOU</u> can prevent serious injury or death from unsafe practices.

CAUTION! The lowest level of Safety Message; warns of possible injury. Decals located on the Equipment with this Signal Word are Black and Yellow.

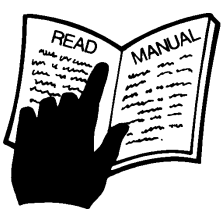
WARNING! Serious injury or possible death! Decals are Black and Orange.

DANGER! Imminent death/critical injury. Decals are Red and White. (SG-1)

<u>READ</u>, <u>UNDERSTAND</u>, and <u>FOLLOW</u> the following Safety Messages. Serious injury or death may occur unless care is taken to follow the warnings and instructions stated in the Safety Messages. Always use good common sense to avoid hazards.

(SG-2)

PELIGRO! Si no lee Ingles, pida ayuda a alguien que si lo lea para que le traduzca las medidas de seguridad. (SG-3)



¡LEA EL INSTRUCTIVO!

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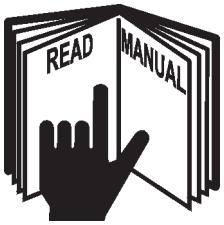
SAFETY

DANGER!

Never operate the Tractor or Implement until you have read and completely understand this Manual, the Tractor Operator's Manual, and each of the Safety Messages found in the Manual or on the Tractor and Implement. Learn how to stop the tractor engine suddenly in an emergency. Never allow inexperienced or untrained personnel too operate the Tractor and Implement without supervision. Make sure the operator has fully read and understood the manuals prior to operation. (SG-4)

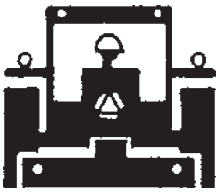


WARNING!

Always maintain the safety decals in good readable condition. If the decals are missing, damaged, or unreadable, obtain and install replacement decals immediately. (SG-5)

WARNING!

Make certain that the "Slow Moving Vehicle" (SMV) sign is installed in such a way as to be clearly visible and legible. When transporting the Equipment use the Tractor flashing warning lights and follow all local traffic regulations. (SG-6)



WARNING!

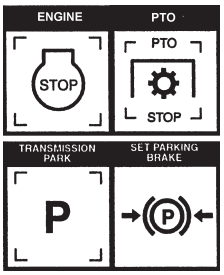
Operate this Equipment only with a Tractor equipped with an approved roll-over-protective system (ROPS). Always wear seat belts. Serious injury or even death could result from falling off the tractor--particularly during a turnover when the operator could be pinned under the ROPS. (SG-7)

WARNING!

Do not modify or alter this Implement. Do not permit anyone to modify or alter this Implement, any of its components or any Implement function. (SG-8)

DANGER!

BEFORE leaving the tractor seat, always engage the brake and/or set the tractor transmission in parking gear, disengage the PTO, stop the engine, remove the key, and wait for all moving parts to stop. Place the tractor shift lever into a low range or parking gear to prevent the tractor from rolling. Never dismount a Tractor that is moving or while the engine is running. Operate the Tractor controls from the tractor seat only. (SG-9)



DANGER!

Never allow children or other persons to ride on the Tractor or Implement. Falling off can result in serious injury or death. (SG-10)

DANGER!

Never allow children to operate or ride on the Tractor or Implement. (SGM-11)

WARNING!

Do not mount the Tractor while the tractor is moving. Mount the Tractor only when the Tractor and all moving parts are completely stopped. (SG-12)

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SAFETY

DANGER!

Start tractor only when properly seated in the Tractor seat. Starting a tractor in gear can result in injury or death. Read the Tractor operators manual for proper starting instructions. (SG-13)

DANGER!

Never work under the Implement, the framework, or any lifted component unless the Implement is securely supported or blocked up to prevent sudden or inadvertent falling which could cause serious injury or even death. (SG-14)

DANGER!

Do not operate this Equipment with hydraulic oil leaking. Oil is expensive and its presence could present a hazard. Do not check for leaks with your hand! Use a piece of heavy paper or cardboard. High-pressure oil streams from breaks in the line could penetrate the skin and cause tissue damage including gangrene. If oil does penetrate the skin, have the injury treated immediately by a physician knowledgeable and skilled in this procedure. (SG-15)

WARNING!

The operator and all support personnel should wear hard hats, safety shoes, safety glasses, and proper hearing protection at all times for protection from injury including injury from items thrown by the equipment. (SG-16)

CAUTION!

PROLONGED EXPOSURE TO LOUD NOISE MAY CAUSE PERMANENT HEARING LOSS! Tractors with or without an Implement attached can often be noisy enough to cause permanent hearing loss. We recommend that you always wear hearing protection if the noise in the Operator's position exceeds 80db. Noise over 85db over an extended period of time will cause severe hearing loss. Noise over 90db adjacent to the Operator over an extended period of time will cause permanent or total hearing loss. *Note:* Hearing loss from loud noise [from tractors, chain saws, radios, and other such sources close to the ear] is cumulative over a lifetime without hope of natural recovery. (SG-I7)

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WARNING!

Periodically inspect all moving parts for wear and replace when necessary with authorized service parts. Look for loose fasteners, worn or broken parts, and leaky or loose fittings. Make sure all pins have cotter pins and washers. Serious injury may occur from not maintaining this machine in good working order. (SG-21)

WARNING!

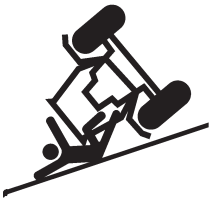
Never attempt to lubricate, adjust, or remove material from the Implement while it is in motion or while tractor engine is running. Make sure the tractor engine is off before working on the Implement. (SG-20)

WARNING!

Transport only at safe speeds. Serious accidents and injuries can result from operating this equipment at unsafe speeds. Understand the Tractor and Implement and how it handles before transporting on streets and highways. Make sure the Tractor steering and brakes are in good condition and operate properly.

Before transporting the Tractor and Implement, determine the safe transport speeds for you and the equipment. Make sure you abide by the following rules:

1. Test the tractor at a slow speed and increase the speed slowly. Apply the Brakes smoothly to determine the stopping characteristics of the Tractor and Implement.
   As you increase the speed of the Tractor the stopping distance increases. Determine the maximum safe transport speed for you and this Equipment.
2. Test the equipment at a slow speed in turns. Increase the speed through the turn only after you determine that it is safe to operate at a higher speed. Use extreme care and reduce your speed when turning sharply to prevent the tractor and implement from turning over. Determine the maximum safe turning speed for you and this equipment before operating on roads or uneven ground.
3. Only transport the Tractor and Implement at the speeds that you have determined are safe and which allow you to properly control the equipment.



Be aware of the operating conditions. Do not operate the Tractor with weak or faulty brakes. When operating down a hill or on wet or rain slick roads, the braking distance increases: use extreme care and reduce your speed. When operating in traffic always use the Tractor's flashing warning lights and reduce your speed. Be aware of traffic around you andwatch out for the other guy. (SG-19)

WARNING!

Always read carefully and comply fully with the manufacturers instructions when handling oil, solvents, cleansers, and any other chemical agent.(SG-22)

DANGER!

Never run the tractor engine in a closed building or without adequate ventilation. The exhaust fumes can be hazardous to your health. (SG-23)

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SAFETY

DANGER!

KEEP AWAY FROM ROTATING ELEMENTS to prevent entanglement and possible serious injury or death. (SG-24)

DANGER!

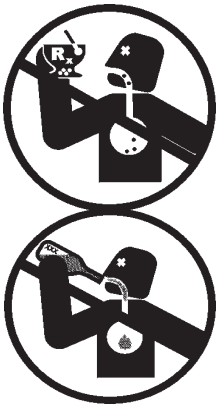
Never allow children to play on or around Tractor or Implement. Children can slip or fall off the Equipment and be injured or killed. Children can cause the Implement to shift or fall crushing themselves or others. (SG-25)

WARNING!

Do not exceed the rated PTO speed for the Implement. Excessive PTO speeds can cause Implement driveline or blade failures resulting in serious injury or death. (SG-26)

DANGER!

NEVER use drugs or alcohol immediately before or while operating the Tractor and Implement. Drugs and alcohol will affect an operator's alertness and coordination and therefore affect the operator's ability to operate the equipment safely. Before operating the Tractor or Implement, an operator on prescription or over-the-counter medication must consult a medical professional regarding any side effects of the medication that would hinder their ability to operate the Equipment safely. **NEVER** knowingly allow anyone to operate this equipment when their alertness or coordination is impaired. Serious injury or death to the operator or others could result if the operator is under the influence of drugs or alcohol. (SG-27)



WARNING!

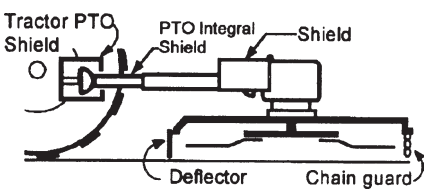
Mow only in conditions where you have clear visibility in daylight or with adequate artificial lighting. Never mow in darkness or foggy conditions where you cannot clearly see at least 100 yards in front and to the sides of the tractor and mower. Make sure that you can clearly see and identify passersby, steep slopes, ditches, drop-offs, overhead obstructions, power lines, debris and foreign objects. If you are unable to clearly see this type of items discontinue mowing. (SGM-1)

DANGER!

There are obvious and hidden potential hazards in the operation of this Mower. REMEMBER! This machine is often operated in heavy brush and in heavy weeds. The Blades of this Mower can throw objects if shields are not properly installed and maintained. Serious injury or even death may occur unless care is taken to insure the safety of the operator, bystanders, or passersby in the area. Do not operate this machine with anyone in the immediate area. Stop mowing if anyone is within 100 yards of mower. (SGM-2)

DANGER!

All Safety Shields, Guards and Safety devices including (but not limited to) - the Deflectors, Chain Guards, Steel Guards, Gearbox Shields, PTO integral shields , and Retractable Door Shields should be used and maintained in good working condition. All safety devices should be inspected carefully at least daily for missing or broken components. Missing, broken, or worn items must be replaced at once to reduce the possibility of injury or death from thrown objects, entanglement, or blade contact. (SGM-3)



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SAFETY

DANGER!

The rotating parts of this machine have been designed and tested for rugged use. However, the blades could fail upon impact with heavy, solid objects such as metal guard rails and concrete structures. Such impact could cause the broken objects to be thrown outward at very high velocities. To reduce the possibility of property damage, serious injury, or even death, never allow the cutting blades to contact such obstacles. (SGM-4)

WARNING!

Extreme care should be taken when operating near loose objects such as gravel, rocks, wire, and other debris. Inspect the area before mowing. Foreign objects should be removed from the site to prevent machine damage and/or bodily injury or even death. Any objects that cannot be removed must be clearly marked and carefully avoided by the operator. Stop mowing immediately if blades strike a foreign object. Repair all damage and make certain rotor or blade carrier is balanced before resuming mowing. (SGM-5)

WARNING!

Many varied objects, such as wire, cable, rope, or chains, can become entangled in the operating parts of the mower head. These items could then swing outside the housing at greater velocities than the blades. Such a situation is extremely hazardous and could result in serious injury or even death. Inspect the cutting area for such objects before mowing. Remove any like object from the site. Never allow the cutting blades to contact such items. (SGM-6)

WARNING!

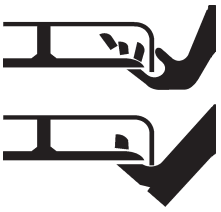
Mow at the speed that you can safely operate and control the tractor and mower. Safe mowing speed depends on terrain condition and grass type, density, and height of cut. Normal ground speed range is from 0 to 5 mph. Use slow mowing speeds when operating on or near steep slopes, ditches, drop-offs, overhead obstructions, power lines, or when debris and foreign objects are to be avoided. (SGM-7)

WARNING!

Avoid mowing in reverse direction when possible. Check to make sure there are no persons behind the mower and use extreme care when mowing in reverse. Mow only at a slow ground speed where you can safely operate and control the tractor and mower. Never mow an area that you have not inspected and removed debris or foreign material. (SGM-8)

WARNING!

Do not put hands or feet under mower decks. Blade Contact can result serious injury or even death. Stay away until all motion has stopped and the decks are securely blocked up. (SGM-9)



DANGER!

Replace bent or broken blade with new blades. NEVER ATTEMPT TO STRAIGHTEN OR WELD ON BLADES SINCE THIS WILL LIKELY CRACK OR OTHERWISE DAMAGE THE BLADE WITH SUBSEQUENT FAILURE AND POSSIBLE SERIOUS INJURY FROM THROWN BLADES. (SGM-10)

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SAFETY

WARNING!

Do not let the Blades turn when the Mower Deck is raised for any reason, including clearance or for turning. Raising the Mower deck exposes the Cutting Blades which creates a potentially serious hazard and could cause serious injury or even death from objects thrown from the Blades. (SRM-7)

WARNING!

Never leave Tractor and Implemented unattended while the implement is in the lifted position. Accidental operation of lifting lever or a hydraulic failure may cause sudden drop of unit with injury or death by crushing. To properly park the implement when disconnecting it from the tractor, lower the stand and put the retaining pin securely in place, or put a secure support under the A-Frame. Lower the implement carefully to the ground. Do not put hands or feet under lifted components. (S3PT-1)

DANGER!

Rotary Mowers are capable under adverse conditions of throwing objects for great distances (100 yards or more) and causing serious injury or death. Follow safety messages carefully

STOP MOWING IF PASSERSBY ARE WITHIN 100 YARDS UNLESS:

- -Front and Rear Deflectors, Chain Guards, or Bands are installed and in good, workable condition;
- -Mower sections or Wings are running close to and parallel to the ground without exposed Blades;
- -Passersby are outside the existing thrown-object zone;
- -All areas have been thoroughly inspected and all foreign material such as rocks, cans, glass, and general debris has been removed.

NOTE: Where there are grass and weeds high enough to hide debris that could be struck by the blades, the area should be: inspected and large debris removed, mowed at an intermediate height, inspected, closely with any remaining debris being removed, and mowed again at desired final height. (This will also reduce power requiredto mow, reduce wear and tear on the Mower drivetrain, spread cut material better, eliminate streaking, and make the final cut more uniform.)

(SRM-1)

DANGER!

Always disconnect the main PTO Driveline from the Tractor before performing service on the Mower. Never work on the Mower with the tractor PTO driveline connected and running. Blades or Drivelines could turn without warning and cause immediate entanglement, injury or death. (SRM-3)

DANGER!

Do not turn so sharp or lift mower so high to produce a severe "knocking" of the Driveline which will cause accelerated wear and breakage of drive train components and could result inpossible injury from the separated Driveline sections. (SRM-4)

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SAFETY

WARNING!

Use extreme care when lowering or unfolding the implement's wings. Make sure no bystanders are close by or underneath the wings. Allow ample clearance around the implement when folding or unfolding the wings. Use extreme caution around buildings or overhead power lines.

(S3PT-5)

CAUTION!

To prevent tipping of implement when stored in folded position, use carrying wheels or adequate stands on center frame. (S3PT-6)

DANGER!

There are obvious and hidden potential hazards in the operation of this Implement as in all power-driven or pulled equipment. REMEMBER! This machine is often operated in rough terrain conditions that include tall grass, weeds, gullies, holes, slopes, hidden obstructions and the like. Serious injury or even death may occur unless care is taken to assure the safety of the operator and bystanders in the area. Do not operate this machine with anyone in the immediate area. (S3PT-7)

DANGER!

Make sure the PTO shield, integral driveline shields, and input shields are is installed when using PTO-driven equipment. Always replace any shield if it is damaged or missing. (S3PT-8)

WARNING!

Relieve hydraulic pressure prior to doing any maintenance or repair work on the Implement. Place the Implement on the ground or securely blocked up, disengage the PTO, and turn off the tractor engine. Push and pull the Remote Cylinder lever in and out several times prior to starting any maintenance or repair work. (S3PT-9)

WARNING!

The rotating parts of this machine continue to rotate even after the PTO has been turned off. The operator should remain in his seat for 60 seconds after the brake has been set, the PTO disengaged, the tractor turned off, and all evidence of rotation has ceased. (3PT-10)

"Wait a minute...Save a life!"

© 2004 Alamo Group Inc.

SAFETY

DANGER!

This Implement is wider than the Tractor. Be careful when operating or transporting this equipment to prevent the Implement from running into or striking sign posts, guard rails, concrete abutments or other solid objects. Such an impact could cause the Implement and Tractor to pivot violently resulting in loss of steering control, serious injury, or even death. Never allow the Implement to contact obstacles. (S3PT-12)

DANGER!

Be particularly careful when transporting the Implement using the tractor. Turn curves or go up or down hills only at a low speed and at a gradual steering angle. Make certain that at least 20% of the tractor's weight is on the front wheels to maintain safe steerage. Slow down on rough or uneven surfaces. (STI-1)

DANGER!

When the Wings are folded for transport, the center of gravity is raised and the possibility of overturn is increased. Drive slowly and use extremecaution when turning on hillsides. Overturning the Implement could cause the Implement to overturn the Tractor and vice versa resulting in serious injury or even death. Never fold wings on a hillside...the Implement may overturn. (STI-2)

DANGER!

DO NOT allow any person under a folded wing unless wing is securely locked up or supported. **DO NOT** approach the Implement unless the Tractor is turned off and all motion has ceased. Never work under the frame work, or any lifted component unless the implement is securely supported or blocked up. A sudden or inadvertent fall by any of these components could cause serious injury or even death. (STI-3)

WARNING!

Never unhitch without using the Tongue Jack. The Tongue is very heavy. Attempting to lift the Tongue without using the Tongue Jack could cause **strains or other injury.** Allowing the tongue to fall **suddenly and unexpectedly** could result in **crushing injury.** Use the Tongue Jack for **lifting the implement only.** Overloading the Tongue Jack can cause failure with possible **serious bodily injury or even death.** (STI-4)

CAUTION!

On a fully-assembled unit, do not remove the Wing Retaining Strap until hoses are attached to the tractor and the Wing Cylinders are filled with oil. Lower the Wings slowly and carefully. Keep bystanders away during operations. (STI-5)

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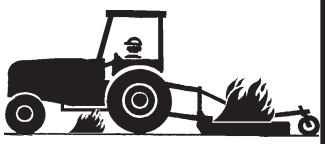
SAFETY

WARNING!

Only tow the Implement behind a properly sized and equipped Tractor which exceeds the weight of the Implement by at least 20%. DO NOT tow the Implement behind a truck or other type of vehicle. Never tow the Implement and another Implement connected in tandem. Never tow the Implement at speeds over 20 MPH. (STI-6)

WARNING!

Follow these guidelines to reduce the risk of equipment and grass fires while operating, servicing, and repairing the Mower and Tractor:



-Equip the Tractor with a fire extinguisher in an accesible location.
-Do Not operate the Mower on a Tractor with an underframe exhaust.
-Do Not smoke or have an open flame near the Mower and Tractor.
-Do Not drive into burning debris or freshly burnt areas.
-Ensure slip clutches are properly adjusted to prevent excessive slippage and plate heating.
-Never allow clippings or debris to collect near drivelines, slip clutches, and gearboxes. Periodically shut down the Tractor and Mower and clean clippings and collected debris from the mower deck. (SGM-12)

WARNING!

Do not mow with two machines in the same area except with Cab tractors with the windows closed. (SGM-11)

DANGER!

Replace bent or broken blade with new blades. NEVER ATTEMPT TO STRAIGHTEN OR WELD ON BLADES SINCE THIS WILL LIKELY CRACK OR OTHERWISE DAMAGE THE BLADE WITH SUBSEQUENT FAILURE AND POSSIBLE SERIOUS INJURY FROM THROWN BLADES. (SGM-10)

PARTS INFORMATION

Servis-Rhino mowers use balanced and matched system components for blade carriers, blades, cuttershafts, knives, knife hangers, rollers, drivetrain components, and bearings. These parts are made and tested to Servis-Rhino specifications. Non-genuine "will fit" parts do not consistently meet these specifications. The use of “will fit” parts may reduce mower performance, void warranties, and present a safety hazard. Use genuine Servis-Rhino mower parts for economy and safety. (SPRM-1)

SEE YOUR SERVIS-RHINO DEALER

In addition to the design and configuration of this Implement, including Safety Signs and Safety Equipment, hazard control and accident prevention are dependent upon the awareness, concern, prudence, and proper training of personnel involved in the operation, transport, maintenance, and storage of the machine. Refer also to Safety Messages and operation instruction in each of the appropriate sections of the Tractor and Equipment Manuals. Pay close attention to the Safety Signs affixed to the Tractor and Equipment. **(SG-18)**

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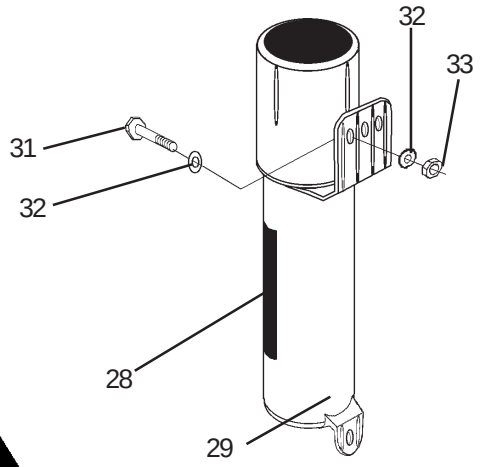
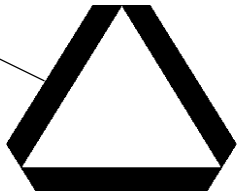
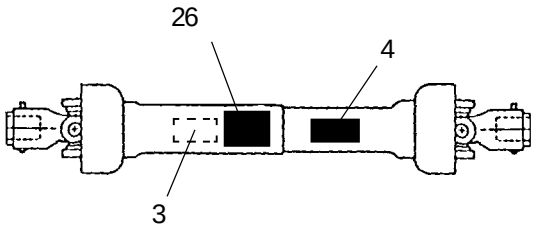
SAFETY

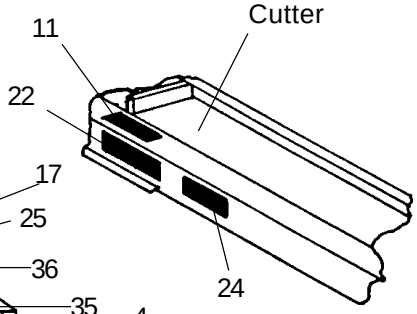
NOTE: Rhino supplies safety decals on this product to promote safe operation. Damage to the decals may occur while in shipping, use, or reconditioning. Rhino cares about the safety of its customers, operators, and bystanders, and will replace the safety decals on this product in the field, free of charge (Some shipping and handling charges may apply). Contact your Rhino dealer to order replacement decals.



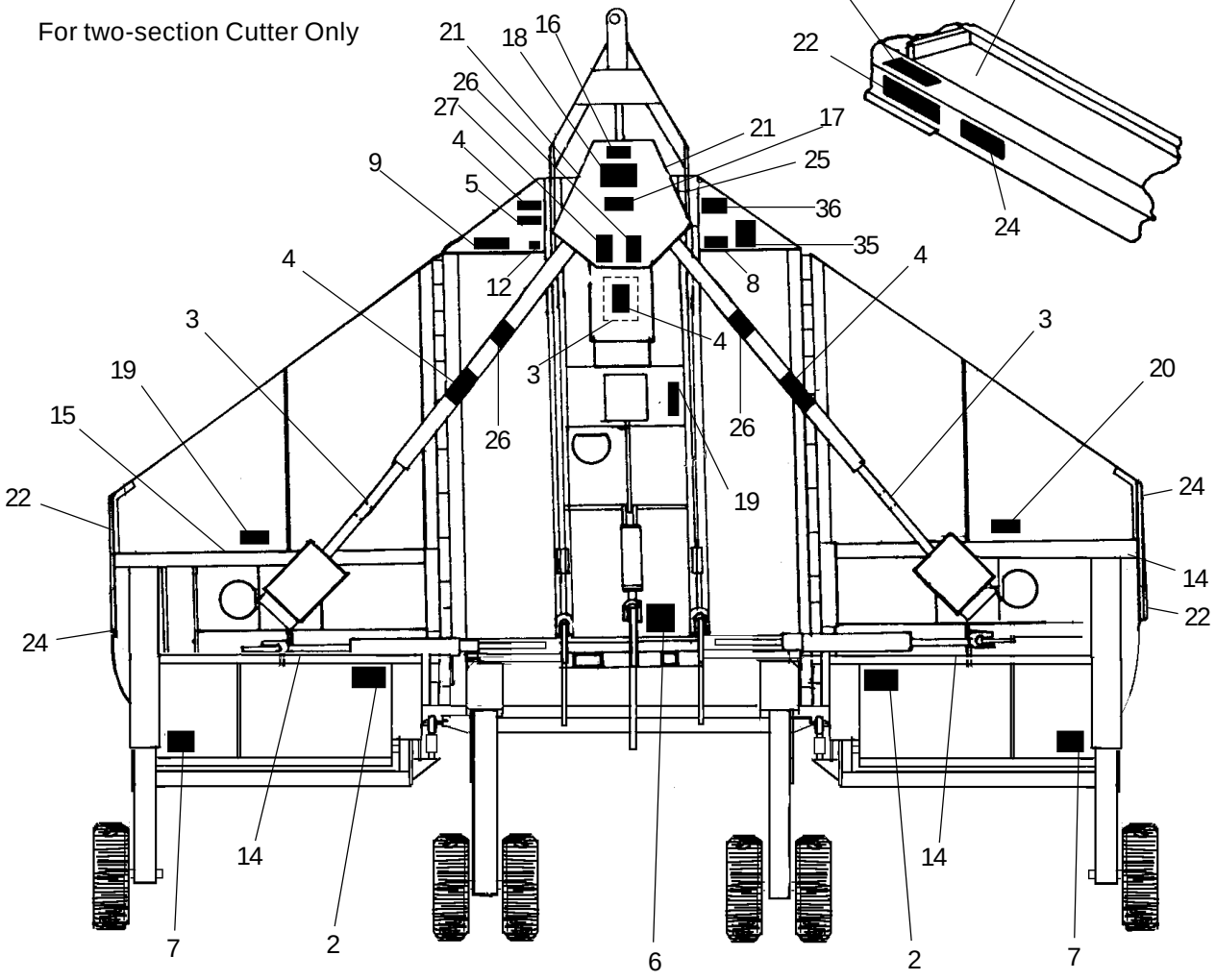




Counterweight
For two-section
Cutter



For two-section Cutter Only



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SAFETY

ITEM	PART NO.	QTY	LEVEL	DESCRIPTION
1	00725746	1	PELIGRO	Get Manual Translated
2	00753840	2(1)	DANGER	Folding Wings
3	00756004	1((3))	DANGER	Driveline Shield Missing; Do Not Operate
4	00756005	1((3))	DANGER	Rotating Driveline, Entanglement
5	00769736	1	WARNING	Use/Repair Shields & Guards, Rotary
6	00756059	1	WARNING	Oil Leak Detection, Skin Penetration
7	00769737	2 (1)	DANGER	Cutting Blades, Thrown Objects, Rotary
8	00756494	1	DANGER	Driveline Hazards
9	00760657	1	IMPORTANT	RHINO Repair Parts
11	999403	0(1)	DANGER	Overturn of Two-Section Flex
12	D103	[1]	INSTRUCT	540 RPM
	D114	[1]	INSTRUCT	1000 RPM
13	03200347	*	REFLECT	SMV Emblem
14	1458392	2	REFLECT	Red Reflective
15	1458393	1	REFLECT	Amber Reflective
16	00763613	1	INSTRUCT	Slip Clutch Adjustment
17	00763977	1	INSTRUCT	Notice to Owner
18	D102	[1]	INSTRUCT	PTO-to-Drawbar Hole Adjustment
19	D137	2(1)	INSTRUCT	CCW Blade Rotation
20	D138	1	INSTRUCT	CW Blade Rotation
21	D302	2	LOGO	RHINO 4-7/8 x 6-1/2
22	D303	2	L.NAME	RHINO TYPE, 4-3/8 x 16-3/4
24	D306	[2]	NAME	FL20
	00766723	[2]	NAME	FL14
25	nfs	1	SER. PLT	FL20 Serial Plate
26	00771284		INSTRUCT	2-Year Driveline Warranty
27	00771283		INSTRUCT	5-Year Gearbox Warranty
28	02977417	1	INSTRUCT	Operators Manual Inside
29	00776031	1	----------	Canister, Operators Manual
30	00766693C	1	----------	Operators Manual
31	10058000	3	----------	Bolt
32	00024100	3	----------	Flatwasher
33	02959924	3	----------	Locknut
34	00749117	1	DANGER	Multi-Hazard
35	00773723	1	PELIGRO	Rotating Driveline Translation

* Furnished by Tractor Manufacturer
( ) For Two-Section unit only
(( )) Installed by Driveline Manufacturer
[ ] Use one or the other

FL 20 & FL14 Decal Sheet

00773384	Center Section	
00773383	Divider Shield	
00776576	Right Wing	FL20
00776571	Left Wing	FL20
00776575	Right Wing	FL14
00776676	Counter Balance	FL14

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SAFETY

10 - - 02967827
SEE INSIDE FRONT COVER
14 - - 99203 RED REFLECTOR
15 - - 99204 YELLOW REFLECTOR
25 -- SERIAL PLATE

NOTICE TO OWNER

An OPERATOR'S MANUAL (with Repair Parts Listing) and a WARRANTY REGISTRATION CARD were attached to this implement during final inspection at the factory. If they were not attached at the time of purchase, please contact your selling dealer at once.

1. Read and understand Manual before operating the implement.
2. Complete, sign, and mail the Warranty Registration Card in today.

00763977

17- - 00763977

IMPORTANT

For your safety and to guarantee optimum product reliability, always use Genuine RHINO replacement parts. The use of inferior "will-fit" parts will void Warranty of your RHINO implement and may cause premature or catastrophic failure which can result in serious injury or death. If you have any questions concerning the repair parts you are using, contact Servis-Rhino, 1502 E. Walnut Seguin, TX 78155 (830) 372-3080.

RHINO 00760657

9- - 00760657

ATTENTION!

Do not operate PTO until ALL Slip Clutches are properly adjusted and checked to make certain that NONE ARE FROZEN and that ALL WILL SLIP under excessive load. See Operator's Manual for complete instructions. 00763613

16--00763613

OPERATOR'S MANUAL INSIDE

READ & UNDERSTAND
Before Operating Tractor & Implement

If Manual is missing, obtain one before operating from Dealer or ALAMO INDUSTRIAL, 1502 E. Walnut, Seguin, TX 78155. Customer Service 800-356-6286

ALAMO INDUSTRIAL

02977417

28 --02977417

PELIGRO

Si No Lee Ingles, Pida Ayuda a Alguien Que Si Lo Lea Para Que le Traduzca las Medidas de Seguridad.

LEA EL INSTRUCTIVO

00725746

1- - 00725746

DANGER

KEEP AWAY - THROWN OBJECTS

- Inspect the area before mowing for potential mower hazards. Remove or avoid all foreign objects such as wire, cable, metal objects, and all other foreign material.
- Foreign material can be thrown from the mower and cause serious bodily injury to the operator and passersby.

- Do Not let rotating blades contact solid objects like rocks, posts, curbs or guard rails.
- Operate only if all Guards-Deflectors are in place and in good condition.

- Do Not operate with Mower or Wing raised off the ground.
- Stop mowing if Passersby enter the area of thrown objects. (See Operator's Manual)

- Stay away from rotating blades. Keep hands and feet away from rotating blades.
- Do Not approach mower until all motion has stopped.

00769737

7-- 00769737

WARNING

OPERATE THIS MACHINE AT
1000 RPM
TRACTOR PTO SPEED ONLY

Overspeeding PTO may cause component failure with resulting injury.

D114

12- - D114

WARNING

OPERATE THIS MACHINE AT
540 RPM
TRACTOR PTO SPEED ONLY

Overspeeding PTO may cause component failure with resulting injury. D103

12- - D103

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27 -- 00771283

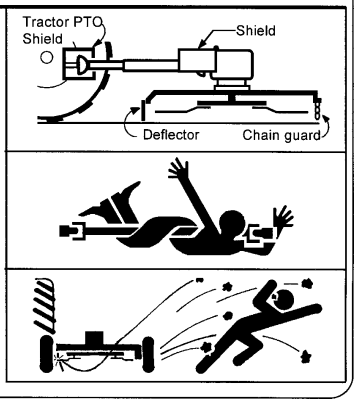
26 -- 00771284

⚠ WARNING

FAILURE TO USE AND MAINTAIN SHIELDS AND DEFLECTORS IN GOOD CONDITION MAY LEAD TO INJURY OR DEATH FROM ENTANGLEMENT WITH ROTATING PARTS, BEING HIT BY OBJECTS THROWN WITH GREAT FORCE BY BLADES, OR BY BLADE CONTACT.

- Always replace Guards which have been removed for maintenance. Never operate with Guards missing or broken.
- Chain Guards, Gearbox & Driveline Shields, Rubber-Fabric Deflectors, and Solid Band Enclosures are subject to wear and lost or broken parts and must be repaired or replaced as soon as damage is found.
- Safety Shielding must be installed and in good condition to reduce the possiblity of thrown objects any time this machine is operated in any area where thrown objects could cause property damage or bodily injury.

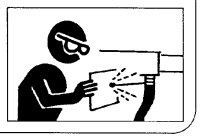
ROTARY 00769736



5- - 00769736

⚠ WARNING

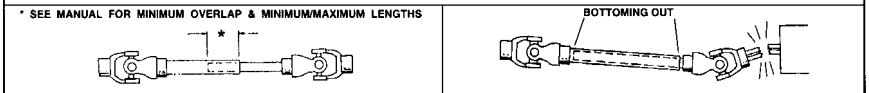
USE PAPER OR CARDBOARD TO CHECK FOR LEAKS. **NEVER USE YOUR HAND.** IF OIL PENETRATES SKIN, GANGRENE OR OTHER SERIOUS INJURY COULD OCCUR. **GET IMMEDIATE MEDICAL ATTENTION.** See Operator's Manual. 00756059



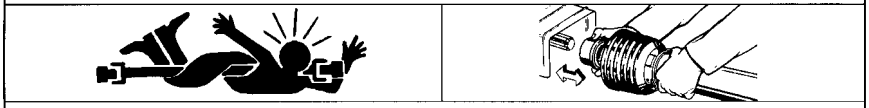
6- - 00756059

⚠ DANGER

1. MAKE CERTAIN DRIVELINES ARE OF THE **CORRECT LENGTH** AND SECURELY ATTACHED. **DRIVELINE SEPARATION** AND/OR **PTO STUB SHAFT** FAILURE CAN CAUSE INJURY OR DEATH. (See Operator's Manual for procedure.)



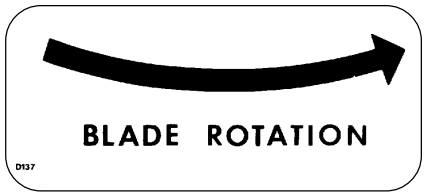
2. MAKE CERTAIN THAT DRIVELINE SHIELDS ARE **INSTALLED CORRECTLY** AND **TURN FREELY** TO PREVENT INJURY OR DEATH FROM ENTANGLEMENT



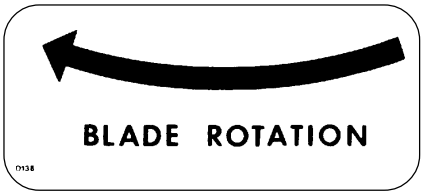
3. MAKE CERTAIN THAT DRIVELINE IS INSTALLED CORRECTLY ON TRACTOR PTO SHAFT. MOVE YOKE BACK AND FORTH UNTIL LOCKING COLLAR CLICKS FORWARD AND LOCKS YOKE IN PLACE

4. **540 PTO RPM** UNLESS SPECIFICALLY MARKED OTHERWISE. 00756494

8- - 00756494



19- - D137



20- - D138

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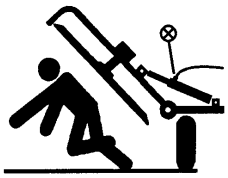
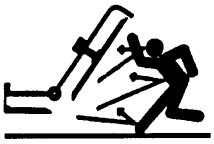
SAFETY

⚠ DANGER



- Stay clear when removing transport strap and lowering or raising wing.
- Component failure or accidental operation of controls may allow wing to fall suddenly and cause bodily injury or death.
- Cylinders with ⊗Restrictors installed must be filled with oil for wings to lower slowly & safely.
- Lock Wings up securely for transporting.



- Do not operate mower with wings raised with passersby in the area.
- Contact with exposed rotating Blades and/or being hit by thrown objects may cause injury or death.

00753840

2- - 00753840

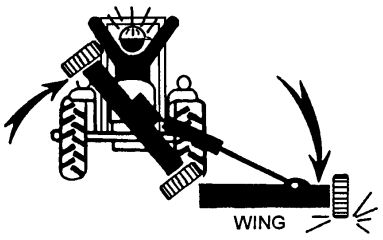
⚠ DANGER

DANGER
ROTATING DRIVELINE-
CONTACT CAN CAUSE DEATH
KEEP AWAY!
DO NOT OPERATE WITHOUT-
• All driveline guards, tractor and equipment shields in place
• Drivelines securely attached at both ends
• Driveline guards that turn freely on driveline
00756005

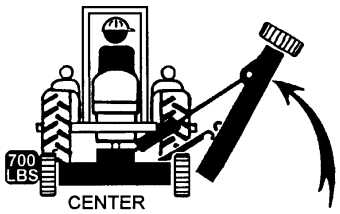
4- - 00756005

⚠ DANGER

WITHOUT WEIGHT, CENTER MAY LIFT UP



WITH WEIGHT, WING FOLDS



1. Keep everyone clear when lifting, folding, and working under raised components. Block securely before working under mower.

2. Install Weight Box and Weight (Minimum of 700# Total) before operating to prevent turning over the center section which can cause **SERIOUS BODILY INJURY** or **DEATH**. Without weight, Do not fold wing.

3. Attach transport strap securely to prevent inadvertent dropping from the transport postition and possible **CRUSING INJURY** or **DEATH**.

999403

11- - 999403

3- - 00756004

RHINO®

23- - 99101 22- - D303

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SAFETY

FL20

24-- D306

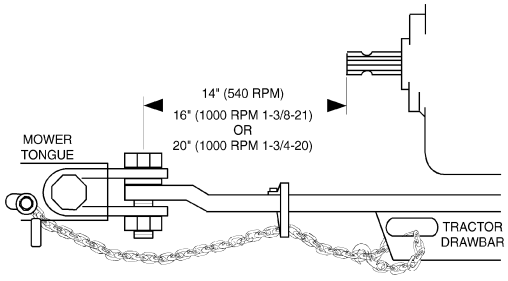
FL14

24-- 00766723

21- - D302

I M P O R T A N T

REQUIRED FOR JACKSHAFT UNIT
SUGGESTED FOR STANDARD SHAFT



18- - D102

⚠ DANGER

FAILING TO FOLLOW SAFETY MESSAGES AND OPERATING INSTRUCTIONS CAN CAUSE SERIOUS BODILY INJURY OR EVEN DEATH TO OPERATOR AND OTHERS IN THE AREA.

1.
READ MANUAL
2. NO RIDERS. NO CHILDREN OPERATORS.
3. USE SAFETY SHOES, HARD HAT, SAFETY GLASSES, SEAT BELTS, & ROPS.
4. BLOCK UP SECURELY BEFORE WORKING UNDER.

1. Study and understand Operator's Manuals, Safety Signs, and Instructional Decals for tractor and implement to prevent misuse, abuse and accidents.
   - Learn how to stop engine suddenly in an emergency. Be alert for passersby and especially children.
2. Allow no children on or near implement or tractor. Allow no riders on tractor or implement. Falling off may cause serious injury or death from being run over by tractor or cutter or contact with rotating blades.
3. Operate only with tractor having Roll-Over Protective Structure (ROPS) and with seatbelt fastened securely and snugly to prevent injury and possible death from falling off or tractor overturn. Personal Protective Equipment such as Hard Hat, Safety Glasses, Safety shoes, and Ear Plugs are recommended.
4. Block up or support raised machine and all lifted components securely before putting hands or feet under or working underneath any lifted components to prevent crushing injury or death from sudden dropping or inadvertent operation of controls. Make certain area is clear before lowering or folding.
5. Before transporting, put Lift Lever in detent or full-lift position. Secure the implement for transport by installing Cylinder Stops or Transport Pin on pull-type implement center axle and Wing Transport Locks on folding implements.
   - Attach Safety Chain to cutter and towing unit securely. See Operator's Manual.
6. Make certain that SMV sign, Warning Lights, and Reflectors are clearly visible. Follow local traffic codes.
7. Never operate with Cutting Head raised if passersby, bystanders, or traffic are in the area to reduce possibility of injury or death form objects thrown by Blades under Guards or cutter structure.
8. Before dismounting, secure implement in transport position or lower to ground.
   - Put tractor in park or set brake, disengage PTO, stop engine, and remove key, and wait until noise of rotation has ceased to prevent entanglement in rotating parts which can cause injury or death.
   - Never mount or dismount a moving vehicle. Crushing from runover may cause injury or death.

5. TRANSPORT SAFELY, LOCK UP.
6. USE SMV, LIGHTS, & REFLECTORS.
7. DO NOT OPERATE WITH CUTTER OR WING RAISED.
8. DO NOT MOUNT OR DISMOUNT WHILE MOVING.
00749117

35- 00749117

⚠ PELIGRO

Un manual de la seguridad de la línea de conducción n/p 00773776 está disponible en español. Llame el número enumerado para una copia grátis.

LINEA DE CONDUCCION GIRATORIA-
EL CONTACTO PUEDE CAUSAR LA MUERTE
¡MANTENERSE LEJOS!
NO FUNCIONE SIN QUE-

- Todos los protectores de la línea de Conducción, alimentador y blindajes del Equipo estén en su lugar
- Las líneas de conducción estén conectadas con seguridad en ambos extremos
- Los protectores de la línea de conducción den vuelta libremente en la línea de Conducción

00773723

36- 00773723

FOR AIRPLANE TIRE -- 00762608

⚠ CAUTION

FAILURE TO FOLLOW SAFETY MESSAGES MAY CAUSE BODILY INJURY AND/OR TIRE AND WHEEL AND/OR EQUIPMENT DAMAGE. BE CAREFUL.

1. MAXIMUM inflation pressure 50 PSI to help prevent tire blowouts. MINIMUM inflation pressure 20 PSI.
2. MAXIMUM transport speed 20 MPH to help prevent overheating and blowouts which may cause injuries.
3. Remove valve core to make certain there is no air pressure left in tube before separating wheel halves to dismount tire. DO NOT LOOSEN WHEEL CLAMP BOLTS BEFORE PRESSURE IS REMOVED FROM TUBE AND TIRE TO PREVENT EXPLOSIVE SEPARATION OF WHEEL HALVES WITH POSSIBLE SERIOUS BODILY INJURY.
4. Never mount any other tire (such as a truck tire) on this wheel supplied with a 22-ply aircraft tire. 00762608

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SAFETY

FEDERAL LAWS AND REGULATIONS

This section is intended to explain in broad terms the concept and effect of federal laws and regulations concerning employer and employee equipment operators. This section is not intended as a legal interpretation of the law and should not be considered as such.

Employer-Employee Operator Regulations
U.S. Public Law 91-596 (The Williams-Steiger Occupational and Health Act of 1970) OSHA

This Act Seeks:
"...to assure so far as possible every working man and woman in the nation safe and healthful working conditions and to preserve our human resources..."

DUTIES

Sec. 5 (a) Each employer-
(1) shall furnish to each of his employees employment and a place of employment which are free from recognized hazards that are causing or are likely to cause death or serious physical harm to his employees;
(2) shall comply with occupational safety and health standards promulgated under this Act.
(b) Each employee shall comply with occupational safety and health standards and all rules, regulations and orders issued pursuant to this Act which are applicable to his own actions and conduct.

OSHA Regulations
OSHA regulations state in part: "At the time of initial assignment and at least annually thereafter, the employer shall instruct every employee in the safe operation and servicing of all equipment with which the employee is, or will be involved."

Employer Responsibilities:
To ensure employee safety during Tractor and Implement operation, it is the employer's responsibility to:

1. Train the employee in the proper and safe operation of the Tractor and Implement.
2. Require that the employee read and fully understand the Tractor and Implement Operator's manual.
3. Permit only qualified and properly trained employees to operate the Tractor and Implement.
4. Maintain the Tractor and Implement in a safe operational condition and maintain all shields and guards on the equipment.
5. Ensure the Tractor is equipped with a functional ROPS and seat belt and require that the employee operator securely fasten the safety belt and operate with the ROPS in the raised position at all times.
6. Forbid the employee operator to carry additional riders on the Tractor or Implement.
7. Provide the required tools to maintain the Tractor and Implement in a good safe working condition and provide the necessary support devices to secure the equipment safely while performing repairs and service.
8. Require that the employee operator stop mowing if bystanders or passerbys come within 100 yards.

Child Labor Under 16 Years of Age
Some regulations specify that no one under the age of 16 may operate power machinery. It is your responsibility to know what these regulations are in your own area or situation. (Refer to U.S. Dept. of Labor, Employment Standard Administration, Wage & Home Division, Child Labor Bulletin #102.)

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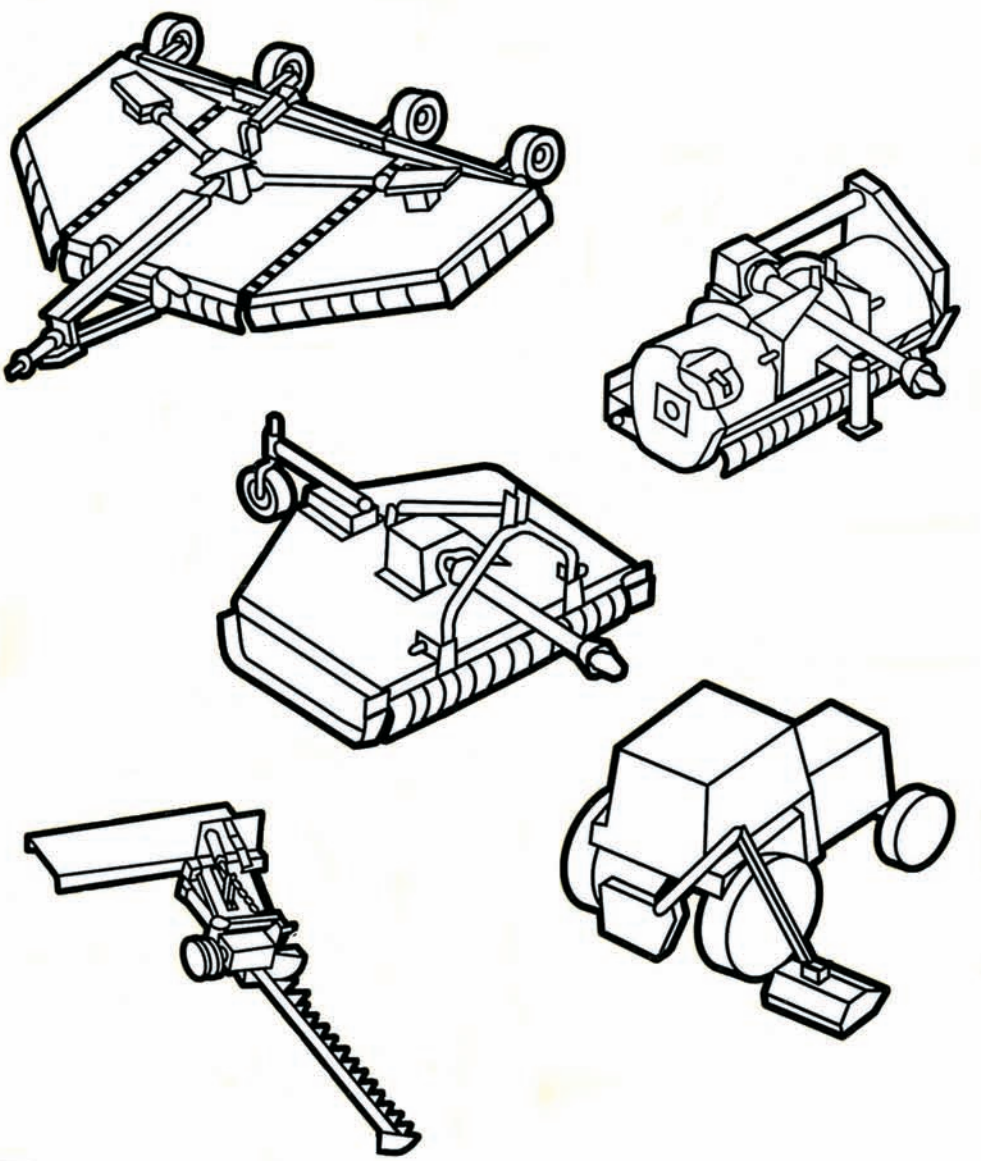
Industrial/ Agricultural Mower

Safety Manual

For Operators and Mechanics



ASSOCIATION OF AEM EQUIPMENT MANUFACTURERS

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Acknowledgement

We wish to acknowledge the contributions of the members of the Association of Equipment Manufacturers to the preparation of this Safety Manual.

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Forward

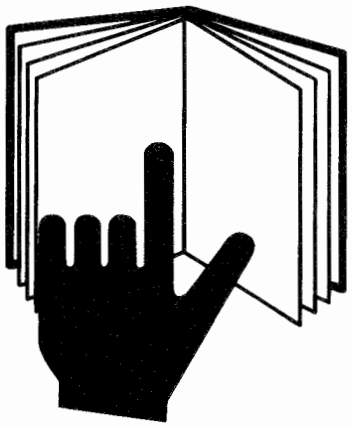
This Safety Manual is intended to point out some of the basic safety situations which may be encountered during the normal operation and maintenance of your machine and to suggest possible ways of dealing with these conditions. This manual is NOT a substitute for the manufacturer's manual(s).

Additional precautions may be necessary, or some instructions may not be applicable, depending on the equipment, attachment devices, and conditions at the worksite or in the service area. The manufacturer has no direct control over machine application, operation, inspection, lubrication, or maintenance. Therefore, it is **YOUR** responsibility to use good safety practices in these areas.

The information provided in this manual supplements the specific information about your machine that is contained in the manufacturer's manual(s). Other information which may affect the safe operation of your machine may be contained on safety signs or in insurance requirements, employer's safety and training programs, safety codes, local, state/provincial and national laws, rules and regulations.

IMPORTANT: *If you do not have the manufacturer's manual(s) for your particular machine, get a replacement manual from your employer, equipment dealer, or the manufacturer of your machine. Keep this safety manual and the manufacturer's manual(s) with your machine.*

A Word to the User



It is your responsibility to read and understand this safety manual and the manufacturer's manual(s) before operating this machine. This safety manual takes you step-by-step through your working day. The safety manual, manufacturer's manual(s), safety signs (decals) and safety precautions must be explained to those users or operators who cannot read the material.

In addition to equipment design and configuration, **HAZARD CONTROL** and **ACCIDENT PREVENTION** are dependent upon the owner's and operator's awareness, concern, prudence, and proper training in the operation, transport, maintenance and storage of equipment.

Remember that **YOU** are the key to safety. Good safety practices not only protect you but also protect the people around you. Study this manual and the manufacturer' s manual(s) for your specific machine. Make them a working part of your safety program. Keep in mind that this safety manual is written only for industrial and agricultural mowers.

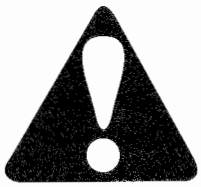
Practice all usual and customary safe working precautions and above all – remember safety is up to YOU. Only YOU can prevent serious injury or death from unsafe practices.

Safety Alerts

Symbol

This Safety Alert Symbol means:

"ATTENTION! BECOME ALERT!
YOUR SAFETY IS INVOLVED!"



The Safety Alert Symbol identifies important safety messages on equipment, safety signs, in manuals or elsewhere. When you see this symbol, be alert to the possibility of death or personal injury. Follow the instructions in the safety message.

Signal Words

Signal words are distinctive words that will typically be found on safety decals on this equipment or other equipment on the worksite. These words are intended to alert the viewer to the existence and relative degree of a hazard.

DANGER This signal word indicates an imminently hazardous situation which, not avoided, will result in death or serious injury.

WARNING This signal word indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

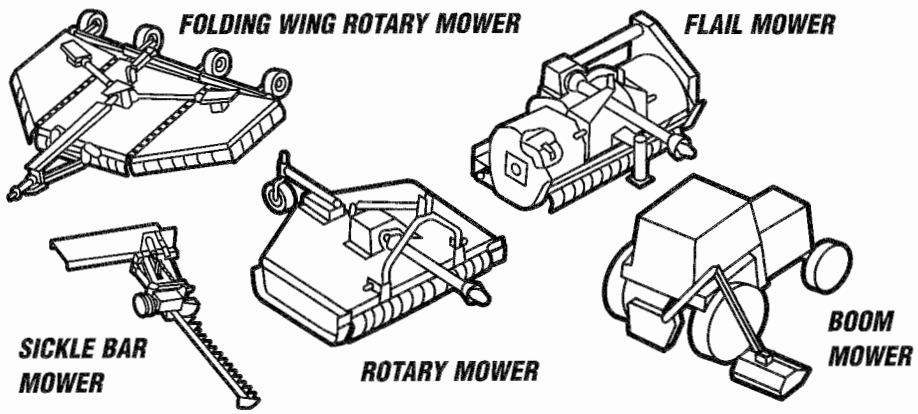
CAUTION This signal word indicates a potentially hazardous situation exists which, if not avoided, may result in minor or moderate injury.

- **ACCIDENTS DISABLE AND KILL.**
- **ACCIDENTS COST.**
- **ACCIDENTS CAN BE AVOIDED.**

Industrial/Agricultural Mowers

A mower for pasture clipping, crop residue shredding, heavy brush cutting for land clearing, waterways, right-of-ways, road side or highway mowing.

INDUSTRIAL/AGRICULTURAL MOWER TYPES:



Be a Responsible Operator

For safe operation of your equipment, you must be a responsible operator. A responsible operator must clearly understand the written instructions supplied by the manufacturer, be trained—including actual operation of the equipment and know the safety rules and regulations for the worksite.

Drugs can and alcohol will affect an operator's alertness and coordination and therefore affect the operator's ability to operate the equipment safely. An operator should **NEVER** use drugs which affect alertness, judgement and coordination or alcohol while operating motorized equipment, including tractors and mowers. An operator on prescription or over-the-counter medication must consult a medical professional regarding any side effects of the medication that would hinder his or her ability to operate this equipment safely. **NEVER** knowingly allow anyone to operate this equipment when their alertness, judgement or coordination is impaired.

Protect Yourself

Wear all the protective clothing and personal safety devices issued to you or called for by job conditions.

You may need:

- Hard hat
- Safety shoes
- Safety glasses with side shields, goggles or face shield
- Heavy gloves
- Hearing protection
- Reflective clothing
- Wet weather gear
- Respirator or filter mask

Wear adequate clothing for the job conditions.

Always know where to get assistance in the case of an emergency. Know where to find and how to use a first aid kit and fire extinguisher/fire suppression system.

Stay alert. Avoid accidents.
Don't learn safety the hard way.

Safety Management of Hazards and Risks

In addition to equipment design and configuration, **HAZARD CONTROL** and **ACCIDENT PREVENTION** are dependent upon the owner's and operator's awareness, concern, prudence, and proper training in the operation, transport, maintenance and storage of equipment.

SAFETY MANAGEMENT OF HAZARDS AND RISKS IS ESSENTIAL TO RESPONSIBLE OWNERS AND OPERATORS OF TRACTORS AND MOWERS.

REVIEW THE FOLLOWING SAFETY MANAGEMENT OF LISTED HAZARDS AND RISKS:

Thrown Object Hazard

POSSIBLE THROWN OBJECT INJURY RISKS EXIST FOR MOWER OPERATORS AND BYSTANDERS DURING MOWER OPERATIONS FROM THE FOLLOWING:

DISCHARGED OBJECTS (ROCKS, DEBRIS, BROKEN MOWER BLADES, BLADE BOLTS, CABLES, CHAINS, WIRE, ETC....) FROM THE MOWER.

Equipment Protective Devices And Recommended Safety Practices

The mower deck and protective devices cannot prevent all objects or debris from escaping the blade enclosure area in every mowing condition. It is possible for objects to escape and travel several hundred (300) feet.

RECOMMENDED SAFETY PRACTICES

Read manufacturer's operator manual(s) for recommended operating safety practices. Explain the practices to users or operators who cannot read.
TO HELP PREVENT SERIOUS INJURY OR DEATH FROM OBJECTS STRIKING OPERATOR OR OTHER PERSONS DO THE FOLLOWING:

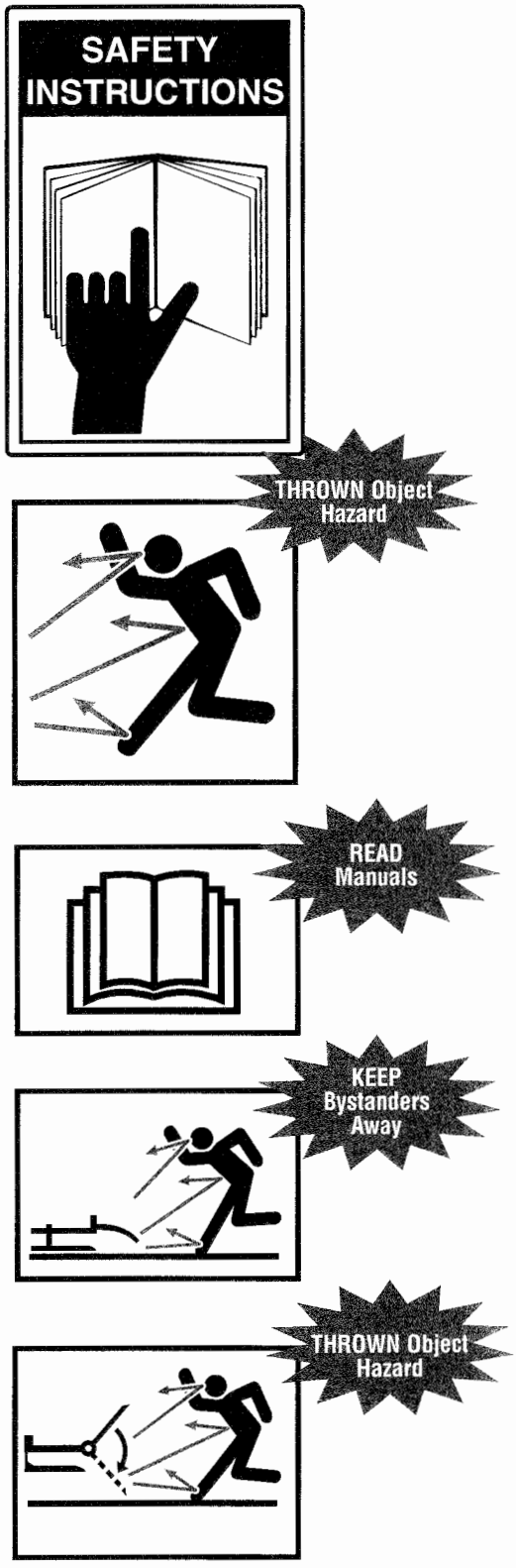
BYSTANDERS SAFETY

- Keep bystanders several hundred (300) feet from mowing area.

EQUIPMENT PROTECTIVE DEVICES SAFETY

To contain, deflect or reduce thrown objects from blade enclosure area:

- Keep chain, flexible or solid deflector shields in place on the front and rear of the mower deck and in good repair.
- Do not operate with damaged or missing thrown object shielding.

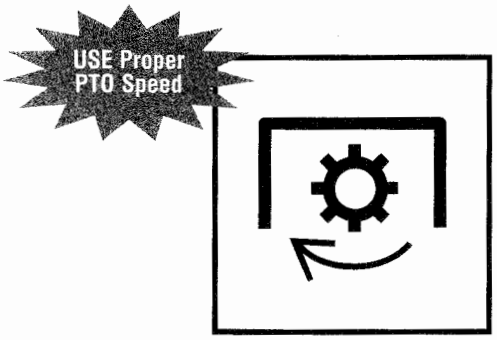


OPERATOR SAFETY

Raised wings, side mount and boom type mower operations may reduce the mower's thrown object shielding effectiveness for the mower operator's protection.

Do the following to increase operator protection from thrown objects during these mowing operations:

- Use enclosed ROPS cabs, special protective enclosures, screens or other operator shielding devices when performing these operations.



EXCEEDING RECOMMENDED PTO SPEEDS

Do not exceed manufacturer's recommended PTO speeds.

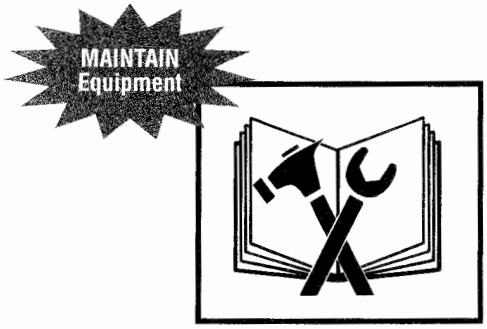
Excessive PTO speeds may cause:

- Blade failures
- Higher velocity objects escaping or broken blades being thrown from mower blade enclosures.
- Potential 540 rpm driveline failures operating at 750 to 1000 rpm speeds.

OTHER SAFETY PRACTICES:

- Never operate mower with broken, bent, missing, or severely worn blades.
- Before mowing, remove debris and foreign objects to avoid them being picked up and thrown out by the mower.

* Do not operate the mower in transport or in raised wing positions.



RECOMMENDED MAINTENANCE PRACTICES

Read manufacturer's operator manual(s) inspection and maintenance instructions for chain guards, flexible or solid deflector shielding:

- Replace worn or damaged guards and other shielding before mowing.
- Use only manufacturer's replacement guards and shielding. Other guarding or shielding sources may not fit or have inadequate materials to meet the strength requirements of the equipment.
- Replace worn or damaged decals and warning instructions.
- Explain the inspection and maintenance instructions to those users or operators who cannot read.

Rotating Blades and Driveline Hazards and Risks

A POSSIBLE INJURY RISK EXISTS TO MOWER OPERATORS AND BYSTANDERS DURING MOWING OPERATIONS FROM THE FOLLOWING:

- **BODY CONTACT WITH ROTATING BLADES.**
- **BODY ENTANGLEMENT WITH ROTATING DRIVELINES AND PARTS.**

Equipment Protective Devices and Recommended Safety Practices

RECOMMENDED SAFETY PRACTICES

Read manufacturer's operator manual(s) for recommended operating safety practices. Explain the practices to those users or operators who cannot read. To help prevent serious injury or death from moving blade contact, driveline or parts entanglement of operators or other persons do the following:

BYSTANDERS SAFETY

- Do not operate near bystanders.
- Keep other persons several hundred (300) feet from the mowing area.

OPERATOR SAFETY PRACTICES

- Do not allow riders on tractor or mower. Securely fasten seat belt when mowing.
- Use proper equipment shutdown practice before servicing, adjusting, cleaning or unclogging the mower.
- Keep clear of rotating blades, parts, and drivelines.
- Never start tractor engine while standing beside equipment.
- Only start tractor engine while sitting in operator's seat with seat belt fastened.

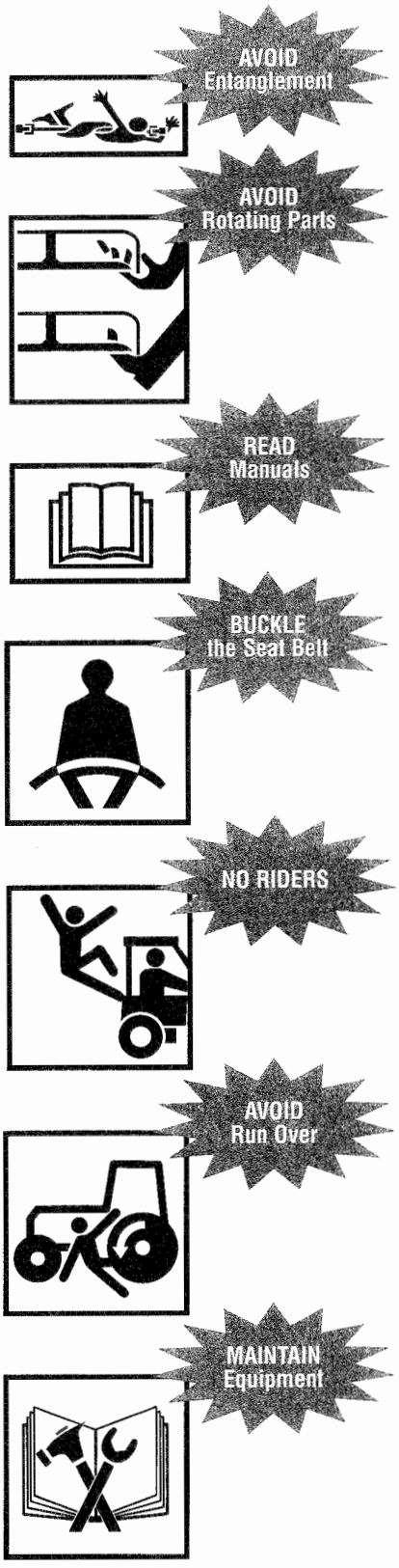
RECOMMENDED GUARDS, DRIVELINE GUARDS AND SHIELDING SAFETY PRACTICES

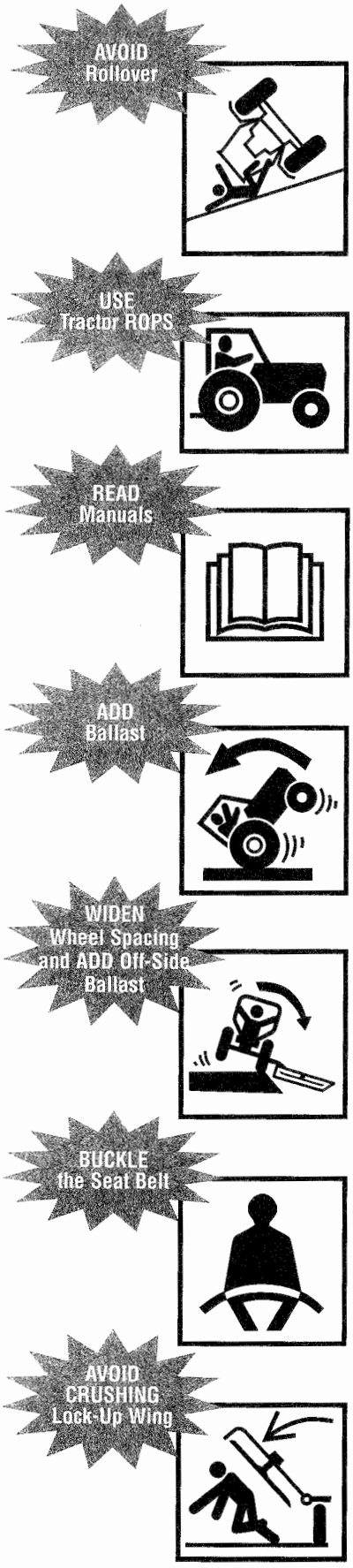
- Keep guards, driveline and other shielding in place and in good repair.
- Do not operate mower with missing or damaged guards, driveline guards or other shielding.

RECOMMENDED MAINTENANCE PRACTICES

Read manufacturer's operator manual(s) inspection and maintenance instructions for guards, driveline guards and other shielding:

- Replace worn or damaged guards, driveline guards and other shielding before mowing.
- Use only manufacturer's replacement guards and shielding. Other guarding or shielding sources may not fit or have inadequate materials to meet the strength requirements of the equipment.
- Replace worn or damaged decals and warning instructions.
- Explain the inspection and maintenance instructions to those users or operators who cannot read.





Tractor and Mower Rollover or Overturn Hazards and Risks

A POSSIBLE ROLLOVER OR OVERTURN INJURY RISK EXISTS TO MOWER OPERATORS DURING MOWING OPERATIONS FROM THE FOLLOWING:

- **ROUGH TERRAIN, STEEP SLOPES, HOLES, BUMPS, RUTS, ROCKS, STUMPS OR OTHER OBSTRUCTIONS THAT COULD OVERTURN TRACTOR AND MOWER.**
- **EXCESSIVE GROUND SPEEDS FOR THESE TERRAIN CONDITIONS.**

Equipment Protective Devices and Recommended Safety Practices

When possible remove stumps, stones, etc.. or mark them and other obstructions clearly to avoid upsets, breakdowns, and dangerous driving conditions. Use extreme care to maintain control over the equipment when operating in these terrain conditions.

RECOMMENDED–TRACTOR ROPS

A tractor equipped with ROPS or enclosed ROPS cab and seat belt for operator safety is essential for additional operator protection when operating mower in these terrain conditions.

RECOMMENDED–TRACTOR STABILITY ADJUSTMENTS

Read the tractor operator's manual for adjustments to increase tractor stability:

- Adding front and rear wheel weights or ballast.
- Adjusting wheel spacing to maximum width .
- Adding off-side counter ballast to side-mounted and boom mowers.
- Explain adjustments to those users or operators who cannot read.

RECOMMENDED SAFETY PRACTICES

Read manufacturer's operator manual(s) for recommended operating safety practices. Explain the practices to those users or operators who cannot read. **To help prevent serious injury or death to the operator from tractor and mower overturns, do the following:**

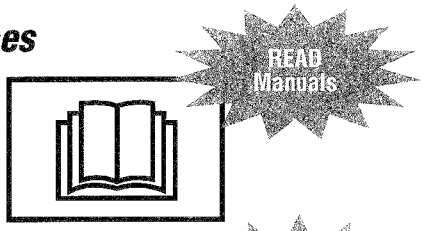
- Securely fasten seat belt when mowing with ROPS equipped tractors.
- Avoid excessive ground speed for terrain conditions.
- Avoid sudden starts, stops and turns when operating up, down or across slopes.
- Avoid slippery ground conditions.
- Make wide and gradual turns.
- Plan to mow down hill on steep slopes to avoid overturning.

Falling Mower or Parts Crushing Hazards and Risks

A POSSIBLE CRUSHING INJURY RISK EXISTS FOR MOWER OPERATORS AND OTHERS DURING MOWING OPERATIONS FROM THE FOLLOWING:

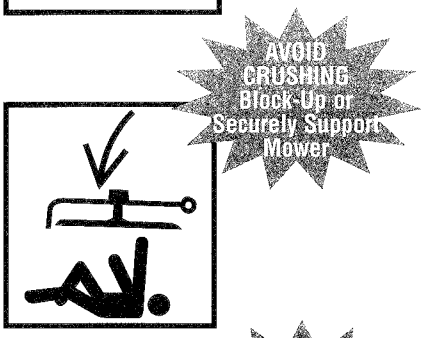
- **FALLING MOWER OR EQUIPMENT FROM HYDRAULIC SYSTEM FAILURE.**
- **FAILURE TO SECURELY SUPPORT, BLOCK-UP OR LOCK-UP LIFTED MOWER OR EQUIPMENT PARTS.**

Equipment Protective Devices and Recommende Safety Practices



Read manufacturer's operator manual(s) for recommended operating safety practices. Explain the practices to those users or operators who cannot read.
To help prevent serious injury or death to operators and other from alling mower or equipment parts, do the following:

RECOMMENDED SAFETY PRACTICES



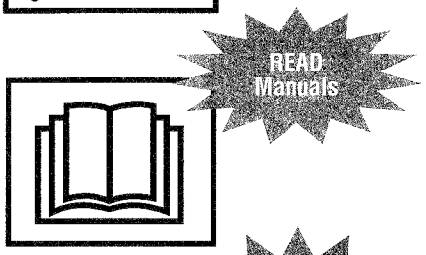
Before working near or underneath lifted mower or equipment parts:
- Use proper equipment shutdown practices before servicing, adjusting, cleaning or unclogging the mower.
- Securely support or block-up raised mower or equipment parts.
- Securely support, block-up or lock-up wings with locking devices on wing type mowers or lower mower or equipment parts to the ground.
- Use transport locks when transporting mower on public roads.

High Pressure Hydraulic Fluid Leak Hazards and Risks

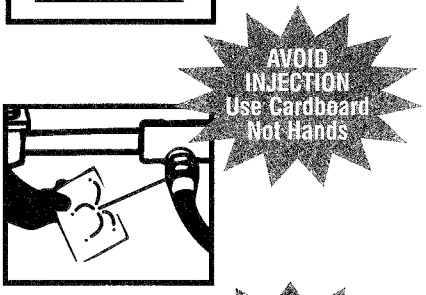
A POSSIBLE HIGH PRESSURE FLUID SKIN INJECTION INJURY AND GANGRENE RISK EXISTS FOR MOWER OPERATORS AND OTHERS FROM HIGH PRESSURE HYDRAULIC OR DIESEL OIL LEAK INJECTION INTO THE SKIN.

TO AVOID GANGRENE, INJECTED FLUID MUST BE SURGICALLY REMOVED WITHIN A FEW HOURS BY A DOCTOR FAMILIAR WITH THIS TYPE OF INJURY.

RECOMMENDED SAFETY PRACTICES

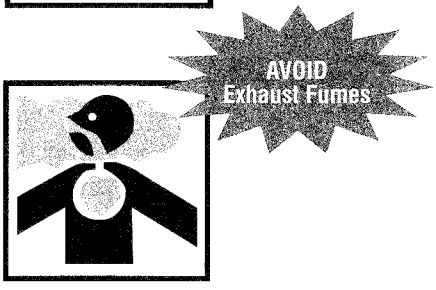


Read manufacturer's operator manual(s) for recommended operating safety practices. Explain the practices to those users or operators who cannot read. High pressure fluid pinhole leaks can be almost invisible.
To help prevent serious injury or death, do the following:
- Search for leaks with cardboard or wood.
- Do not use hands to check for leaks.
- Relieve system pressure before disconnecting lines.
- Before applying system pressure:
  - Check for damaged lines, pipes, and hoses.
  - Check to insure tight connections.
- Before operating pressurized systems:
  - Purge air from system.
  - Refer to the manufacturer's operator manual(s) for instructions.
  - Explain the procedures to those users or operators who cannot read.

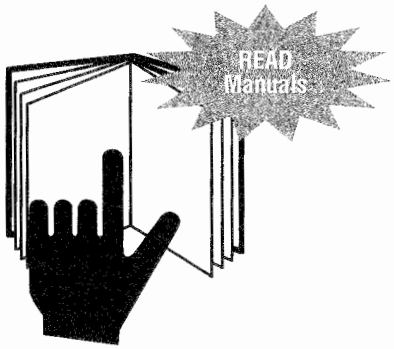


Tractor Refueling Hazards and Risks

To avoid serious injury or death from fire during refueling:
- Shut off engine and ignition.
- Never fill fuel tank near open flames.
- Never smoke while refueling.
- Avoid static electricity sparks by grounding fuel nozzle against tank filler neck.
- Avoid overfilling tank or spilling fuel.
- Clean up any spilled fuel immediately.
- Always replace fuel cap.



To avoid serious injury or death from engine exhaust fumes:
- Adequately ventilate enclosed spaces before starting the engine.



Follow A Safety Program

SAFETY IS IMPORTANT TO RESPONSIBLE OWNERS AND OPERATORS OF TRACTORS AND MOWERS. DO THE FOLLOWING FOR YOUR SAFE MOWING OPERATION:

BE A QUALIFIED OPERATOR BY:

- Reading, understanding and obeying the manufacturer's written instructions in operator manual(s) and safety signs on mower and tractor.
- Receiving operational training with mower and tractor.
- Asking your equipment dealer or supervisor to explain things you do not understand.
- Explaining the written instructions in the operator manual(s) and safety signs (decals) on the mower and tractor to those users or operators who cannot read.

Safety Before Operation

Know Job Site Safety Rules And Regulations

Ask your supervisor about equipment operation safety rules you will be expected to obey.

Some basic rules for your's and others' safety:

- A ROPS and seat belt equipped tractor is required for operator protection during mowing operations.
- Know mower and tractor operating capacity and characteristics.
- Never alter or remove safety equipment.
- Never allow children or unqualified persons to operate mower or tractor.
- Never allow riders on mower or tractor.
- Keep others away from mowing operation.
- Use proper equipment shutdown practice before dismounting tractor.
- Allow all moving parts to stop before making equipment inspections, repairs, or adjustments.
- Securely support or block-up mower before working beneath mower or lifted components.
- Wear personal protective clothing and safety devices issued to you or recommended by the equipment manufacturer.

Know Tractor And Mower Controls

Know the following about your tractor and mower:

- Function, purpose and use of controls.
- Safe operating speeds.
- Safe slope and uneven terrain capabilities.
- Braking and steering characteristics.
- Tractor and mower operating clearances.
- How to stop equipment quickly in an emergency.

Use All Available Equipment Safety Devices

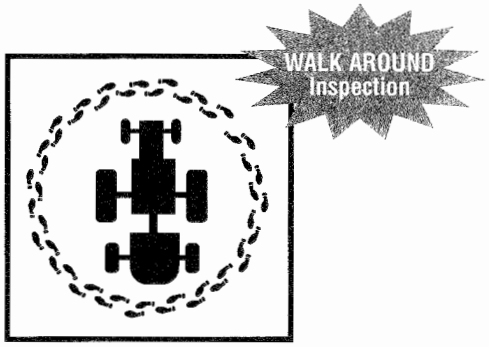
To help keep you and others around you safe:

- Make certain manufacturer's recommended guards, shields and safety signs are installed on equipment and in good condition.
- Keep all protective devices in place and securely fastened.
- **NEVER** operate your equipment with missing, disconnected or damaged safety devices.
- Use ballast and weight required for equipment operational stability.

Check The Mower And Tractor Equipment

Before beginning your work day:

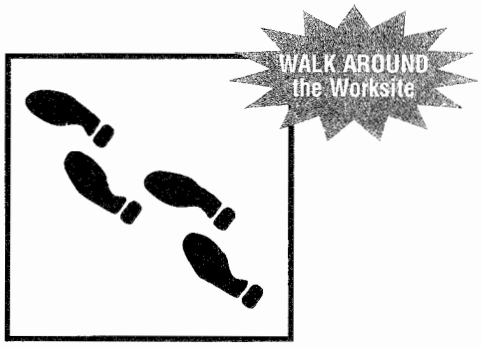
- Check for loose, broken, missing or damaged tractor and mower parts.
- Repair or replace these parts when needed.
- Check for proper tractor and mower attachments.
- Check for proper tractor and mower PTO rpm rating match.
- Check mower blades condition. Sharpen or replace per manufacturer's recommendation. Blade modifications, such as welding or hard surfacing cutting edges by welding or straightening bent blades, can reduce blade strength and adversely affect blade properties and safety.
- Check that all guards and shields are in place and that all equipment is in good operating condition. This includes PTO driveline, gearbox and implement guards and shields that are used for operator protection.
- Check for properly latched driveline yoke end locking devices.
- Check for damaged or leaky tractor and mower hydraulic systems.
- Check and read safety signs and warning instructions.
- Explain the safety signs and warning instructions to those users or operators who cannot read.



Check The Work Area

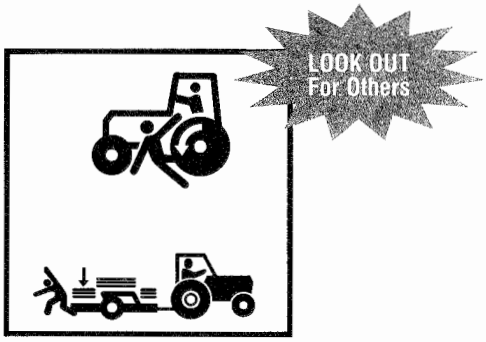
Inspect, identify and avoid hazardous conditions in the work area:

- Rough terrain, drop-offs, ditches, potholes steep slopes, stumps, standing water, mud soft soil, slippery conditions, debris and foreign objects.
- Inspect mowing area and remove or mark all foreign objects and debris to be avoided by mower.



Analyze mowing area to determine:

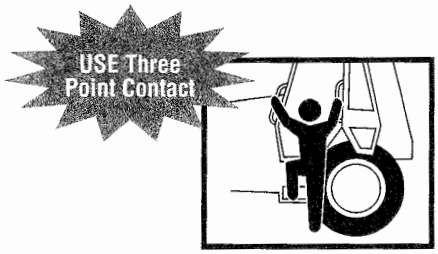
- Best and safest mowing procedure.
- Material type and height to be mowed.
- Operating terrain conditions.
- Using forward travel mowing pattern when possible.

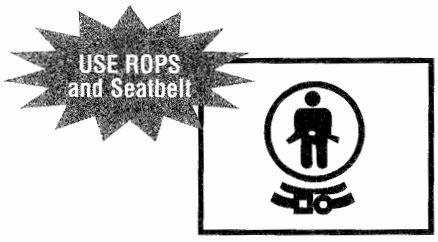


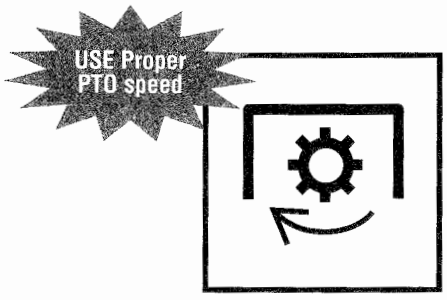
Look Out For The Safety of Others

Before starting equipment:

- Walk around the equipment.
- Check for anyone under, on or near the equipment.
- Clear everyone from these areas.
- Sound a warning.







Mounting Tractor Safely

Before mounting:
- Clean shoes and wipe hands.

During mounting and dismounting:
- Use handholds and step plates.
- Never grab steering wheels or controls for handholds.
- Never mount or dismount from a moving tractor.

Tractor And Mower Controls Safety Test

Before starting:
- Fasten and adjust seat belt on your ROPS-equipped tractor.
- Check parking brake for engagement.
- Check PTO disengagement.
- Check all controls for Neutral or Park position.
- Warn others in area before starting tractor.
- Follow tractor manufacturer's recommended starting procedures.

After starting:
- Check all instruments, gauges and indicator lights for normal operation.
- Check all tractor controls, steering and brakes for proper function.
- Repair improperly functioning tractor before using.
- Raise and lower mower for driveline bottoming out or engagement problems.
- Check your equipment for excessive vibration and unusual noises.
- Use proper equipment shutdown practices before inspecting equipment.

Power Takeoff System And Mower Safety

Tractors with dual-speed (540 or 1000 rpm) shiftable PTO systems.

To avoid serious injury or death from failed parts due to mower over speed:
- Be sure to position PTO selector to mower's rated PTO rpm speed.

Tractors with transmission-driven PTO systems.
A rotary mower will have a significant flywheel effect which may continue to propel a tractor with a transmission-driven PTO system.

The tractor should be equipped and operated as follows:
- Install an over-running clutch.
- Give yourself sufficient maneuvering room and time by anticipating turns, stops and speed reductions.

Safety – During Operation

Hitching Mower To Tractor Safety

Three-point hitch-mounted mower safety:

- Refer to mower and tractor manufacturers' manuals.
- Place tractor's hydraulic power lift (rockshaft) selector lever in down position to avoid unexpected movement.
- Explain the hitching procedures to those users or operators who cannot read.

Pull-type hitch-mounted mower safety:

- Refer to mower and tractor manufacturers' manuals.
- Attach only to drawbar hitch.
- Do not attach to tractor's rear axle or three-point hitch arms.
- Adjust tractor drawbar length for 540 or 1000 rpm PTO operation.

Make The Right Start In Mower Safety

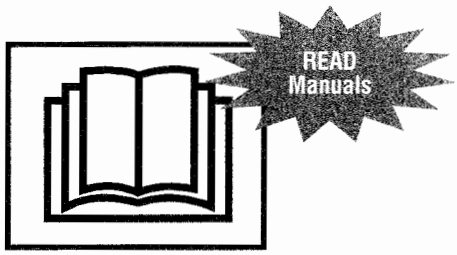
Mow only in daylight or good artificial light conditions.

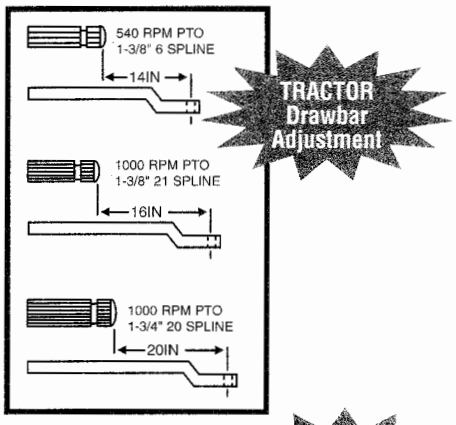
To avoid serious injury or death from mower thrown objects or blade contact:

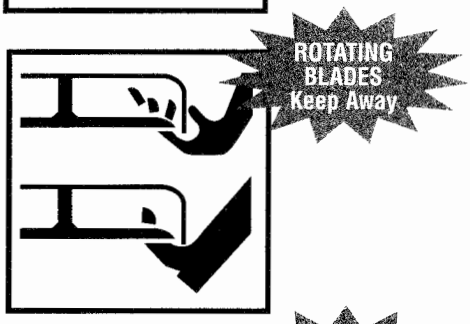
- Keep chain shields, flexible or solid deflector shields or discharge chutes in place and in good repair.
- Keep everyone several hundred (300) feet from mowing operation.
- Never direct mower discharge toward anyone.
- Keep hands, feet and other body parts away from rotating parts, blades and discharge openings.
- Do not operate mower in transport position.

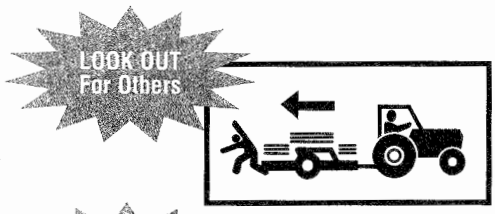
Mower PTO drive engagement:

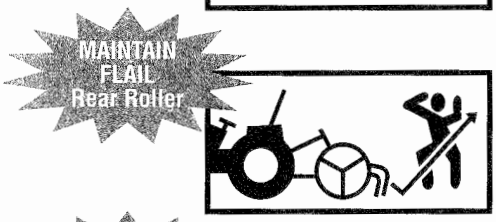
- Raise mower to maximum cutting height.
- Engage PTO at low engine rpm.
- Increase engine rpm to mower rated rpm PTO speed.
- Lower mower to desired cutting height.
- Stop and shut down immediately if the mower strikes an obstruction.
- Inspect and repair any mower damage before resuming mowing.
- Do not operate mower with severe vibrations or with unusual noise.

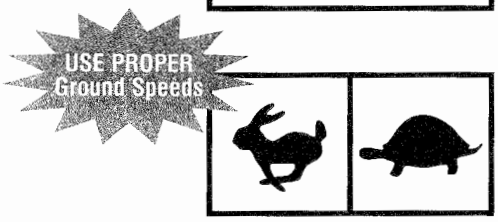


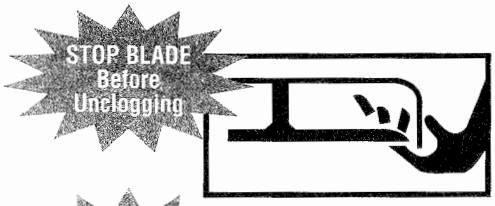


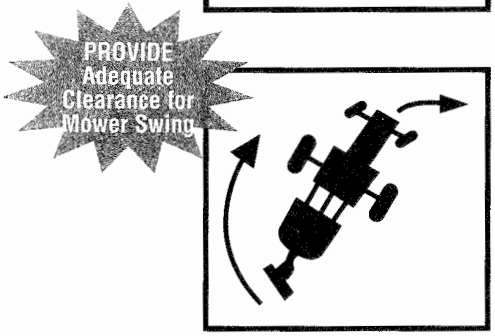


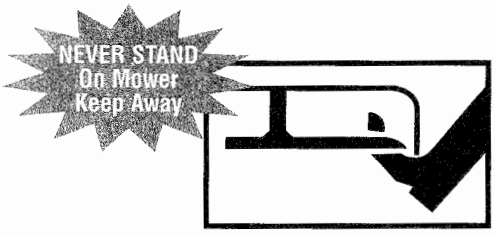


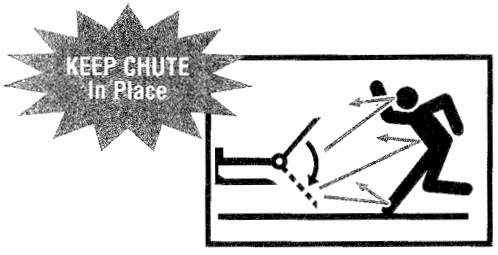












Mowing In Reverse Safety

Avoid mowing in reverse direction when possible.

Do the following when mowing in reverse direction:

- Check for any persons behind mower before reversing direction.
- Use extreme care when reverse direction mowing.
- Maintain rotary mower front and rear safety shields and flail front shields and rear rollers.

Mowing Ground Speed

Proper ground speed depends on terrain conditions and grass type, density and height to be cut:

- Normal ground speed range is 2 to 5 mph.
- Slower ground speed for mowing tall, dense grass.
- Faster ground speed for mowing medium height, thin grass and under smooth terrain conditions.
- Use slower ground speed for mowing in rough, sloping or unfamiliar terrain.

Extremely tall grass mowing

- You may need to mow extremely tall grass twice.

First mowing pass:

- Cut grass higher (10-15 inches) to avoid hidden objects.

Second mowing pass:

- Remove debris and objects.
- Cut grass at desired height and 90 degree to the first mowing pass when possible.
- Use proper equipment shutdown practice for your safety before dismounting tractor.

Watch equipment clearances

Three-point hitch and side mounted mowers have a larger turning arc than pull-type mowers. Allow sufficient clearance for safe turning.

Under Mount Mower Safety

When mowing with an under mount mower:

- Keep removable discharge chute in place and over discharge opening.
- Never stand on an operating mower housing.
- Distribute grass clipping with discharge chute facing mowed area.
- Use proper equipment shutdown practice before clearing clogged mower or discharge chute.

Wing Or Boom Type Mower Overhead Obstruction Hazards and Risks

Check for overhead obstructions with raised wings or boom-type mowers to avoid serious injury or death by contact with:

- Electrical power lines.
- Low tree limbs.
- Other overhead obstructions.

Wing And Side Mount Mowers Safety

When mowing with wing and side-mount mowers:
Raised wing positions reduces shielding protection and increases the thrown object and blade contact hazard risks.

To avoid serious injury or death by thrown objects or blade contact from raising and lowering wings during mowing operations:

- Do not mow with bystanders in mowing area.
- Be sure no one is near mower while raising or lowing wings.
- Keep the exposed rotating wing blade time to a practical minimum during a raised wing mowing operations.
- Stop mowing if persons enter into mowing area.
- Only raise wing to clear objects in the mowing path or to match ground slope.
- Disengage wing drive for extended periods of mowing with raised wings.
- Lower raised wing to ground after clearing object or ground slope conditions.
- Allow all mower blades to stop rotating before raising wing sections during other operations.

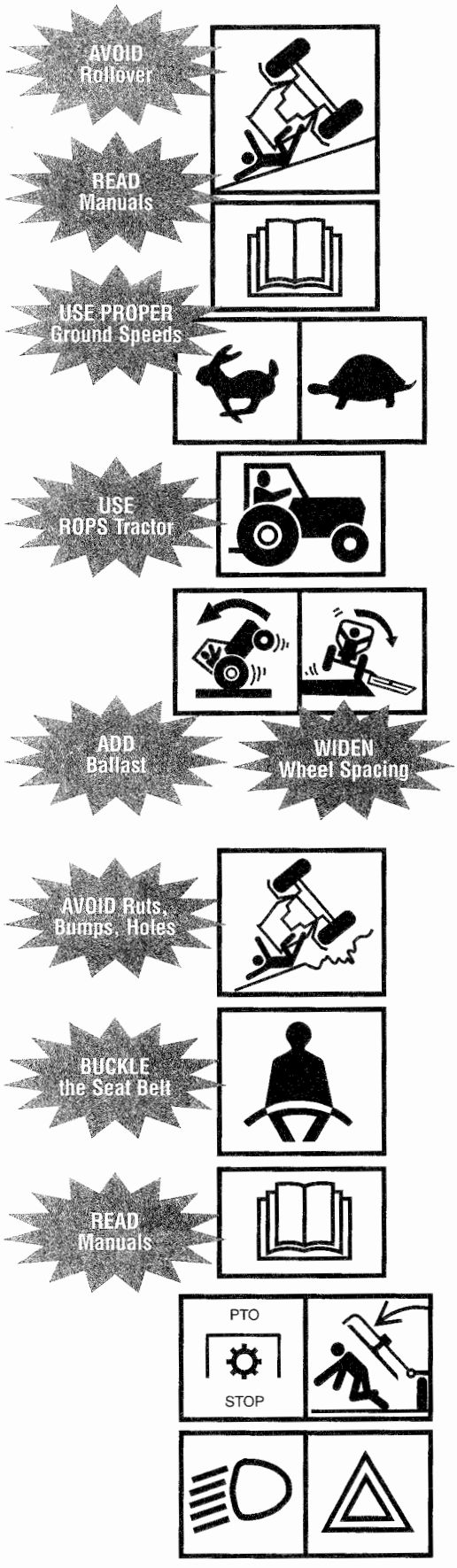
Ditch Bank Mowing Safety

Use extreme care when mowing ditch banks. Watch for washouts, eroded areas and mowing obstructions along the ditch banks. Hitting obstructions with side-mount or boom mowers may swerve the tractor's front end toward the ditch.

Raised wing and boom-type mower ditch bank operations may reduce the mower's thrown object shielding effectiveness for the mower operator's protection.

To increase operator protection from thrown objects during ditch bank operations:

- Use enclosed ROPS cabs, special protective enclosures and other operator shielding when performing these operations.
- Inspect mowing area and remove or mark all foreign objects and debris to be avoided by mower.



Mowing Uneven Terrain Safely

The tractor and mower stability is reduced on slopes and uneven terrain.

You can prevent tractor and mower overturns and maintain equipment stability control by:

- Reviewing tractor and mower operator's manuals for operating safety practices on slopes and uneven terrain conditions. Explain the practices to those users and operators who cannot read.
- Avoiding extremely steep slope operations.
- Using extreme care to maintain control over your equipment when operating in these conditions.
- Increasing tractor stability by adding wheel weights and increasing wheel spacing (Refer to tractor operator's manual for recommendations)
- Using ROPS and seat-belt-equipped tractor for operator safety during mowing operations.
- Maintaining minimum ground speed.
- Making wide and gradual turns.
- Avoiding sudden starts, stops, and turns when operating up, down, or across slopes.
- Not raising rear-mount or side-mount mowers or mower wings from the ground during these operations .
- Keeping alert for holes, bumps, ruts, rocks, stumps or other obstructions that could overturn tractor and mower.
- Avoiding slippery ground conditions that could overturn tractor and mower.
- Avoiding tractor and mower "hang up" by diagonal passing through sharp dips and drops.

Use extreme care in maintaining equipment stability during all uneven terrain and slope mowing operations. You are the final judge as to any slope that can be safely negotiated.

Equipment Road Transporting Safety

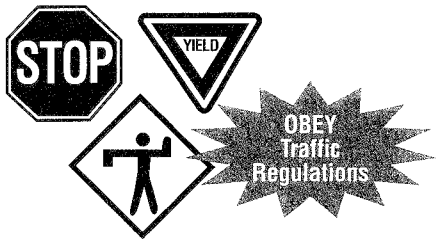
If equipment is to be driven on public roads:

- Refer to tractor and mower manufacturers' operator's manuals for instructions.
- Explain the instructions to those users or operators who cannot read.
- Check local regulations for required equipment markings, lights, flashers, etc., while traveling on public roads. Lights are required on mowers that obscure tractor taillights and/or warning lights.

Before transporting on public roads:

- Disengage PTO to mower.
- Raise mower into transport position.
- Lock wings up into transport position with locking devices on wing-type and side-mounted mowers.
- Attach safety chain between pull-type mower and tractor.
- Make sure lights, flashers, reflectors and SMV are in place and visible.
- Check SMV (Slow-Moving Vehicle) emblem for visibility to any rear approaching vehicle.

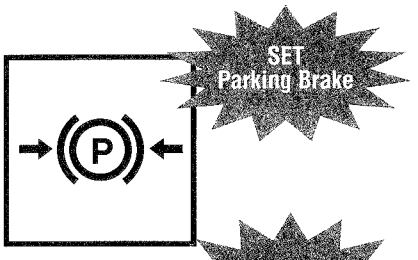
While transporting on public roads:
- Obey all local traffic regulations.
- Approach intersections with caution.
- Observe speed and traffic control signs.
- Avoid panic stops and sharp turns.



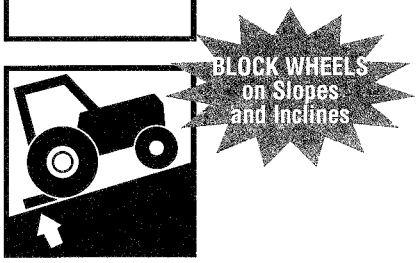
Parking Safety

Park equipment at:
- Designated or out-of-traffic areas.
- Preferably level ground locations.

Sloping ground parking locations:
- Position equipment across slope.
- Set parking brakes.
- Lower mower to ground.
- Block tractor wheels.



Before temporarily parking and leaving disabled equipment near traffic areas:
- Remove equipment from public roads.
- Set out warning flags
- Use tractor flashers.

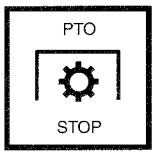


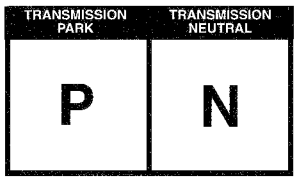
Safety – During Shutdown

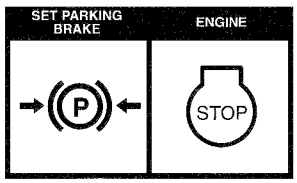
Use Proper Equipment Shutdown Practices For Your Safety

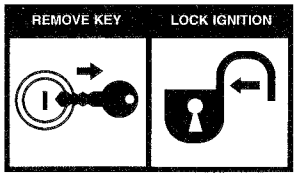
Refer to tractor and mower manufacturer's operator manual(s) for recommend shutdown procedures. Explain the procedures to those users or operators who cannot read.

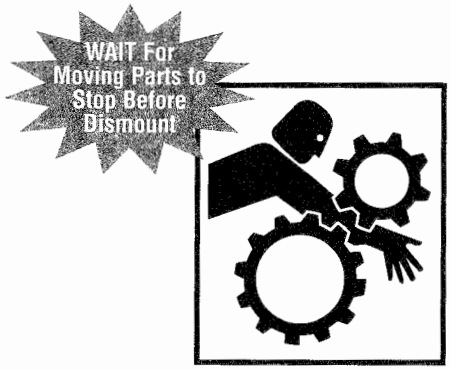
Make proper equipment shutdown procedures an important habit to practice. Follow these safety practices before dismounting tractor:
- Disengage PTO clutch and transmission drive.
- Idle engine for gradual cooling.
- Place the controls in PARK or NEUTRAL.
- Set the parking brake.
- Lower mower to ground.
- Lower wings of wing-type mowers to ground.
- Shut off engine.
- Wait for all moving parts to stop before equipment inspections, adjustments or repairs.
- Relieve hydraulic pressure by moving hydraulic controls several times in all directions.
- Lock ignition and remove key when equipment is to be inspected, repaired, adjusted or unattended.
- Lock anti-vandalism covers and closures when equipment is unattended.
- Dismount carefully maintaining three-point contact.

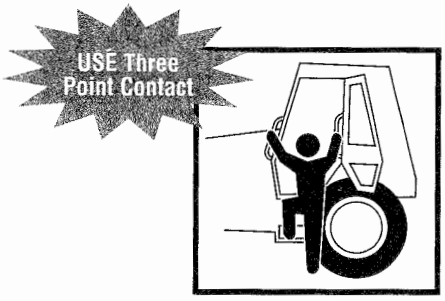


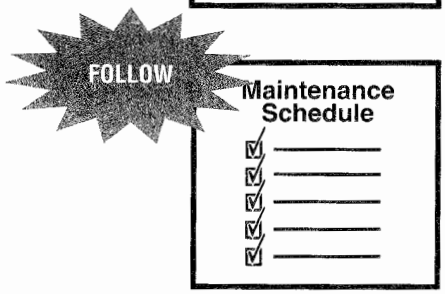












Dismounting Tractor Safely

Before dismounting tractor:

- Use proper equipment shutdown practice for your safety.
- Lower implement to the ground, stop engine and PTO, set brakes, allow all moving parts to stop, and remove key before dismounting from tractor.
- Never dismount from moving equipment.
- Never jump from machines.
- Dismount carefully.
- Check for slippery steps
- Keep feet and hands away from controls.
- Use handholds and steps during dismount.
- Face machine and use 3 point contact (2 hands, 1 foot or 2 feet, 1 hand).

Safety – During Maintenance

Maintenance Safety

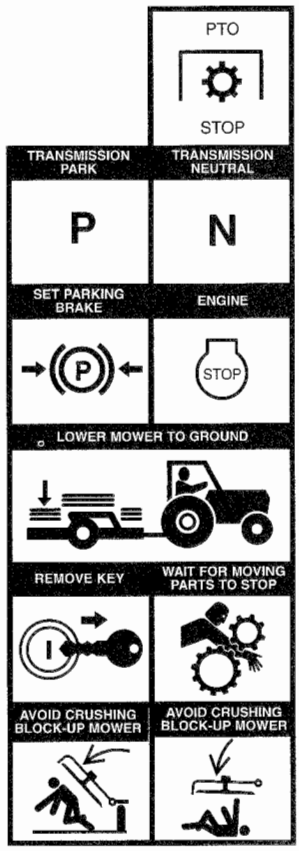
Do the following for your safety before performing any maintenance, repairs or service procedures:

- Follow proper equipment shutdown practice.
- Wear all the protective clothing and personal safety devices necessary to safely perform the job.
- Refer to your manufacturer's manuals for proper maintenance, repair and service procedures. Explain the procedures to those users and operators who cannot read.

Stored energy sources (electrical, mechanical, hydraulic, pneumatic, chemical, thermal, etc..) must be either locked, blocked, relieved, disconnected, stopped, secured, neutralized, controlled or reduced to a practical minimum before any maintenance, repair or service procedures can be done safely.

Some basic safety practices to prevent potential injuries from energy releasing sources:

- Disengage PTO before shutting off engine.
- Place controls in PARK or NEUTRAL before shutting off engine.
- Set parking brake or block wheels.
- Allow all moving parts to stop.
- Lower mower to ground.
- Lower wings to ground on wing-type mowers.
- Shut off tractor engine.
- Lock ignition and remove key.
- Look and listen for evidence of moving parts before opening shields.
- Securely support or block-up mower before working underneath mower or other lifted components.
- Securely support, block-up, or lock-up mower wings with locking devices before working near or underneath a wing-type mower.
- Relieve hydraulic system pressure by moving controls several times in all directions.
- Relieve pressure before disconnecting or disassembling any pressurized system.
- Block or relieve spring pressure before disassembling any spring-loaded mechanism.
- Securely support or block up any elevated machine component before working on it.
- Avoid flames, sparks, or smoking near any fuels.

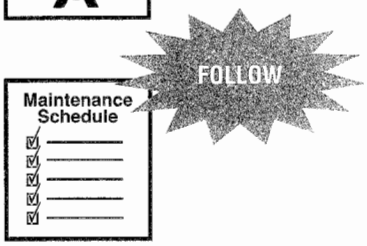


Mower Manufacturer Parts and Your Safety

Most mower manufacturers use special fasteners and specially designed parts to meet mowing operations requirements.

Critical safety-related parts (Self-locking blade bolts, blades, pins, shields or other special items) have specific strength, design and fit requirements for the make and model mower you are using.

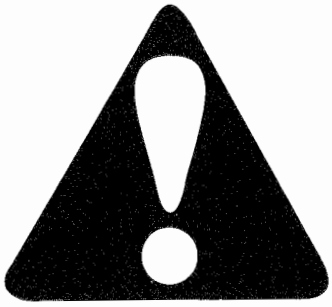
Modifications or repair parts not approved by the mower manufacturer can cause serious safety hazard exposure risk to you and others.



TO AVOID SERIOUS INJURY OR DEATH FROM UNAPPROVED PARTS OR MODIFICATIONS:

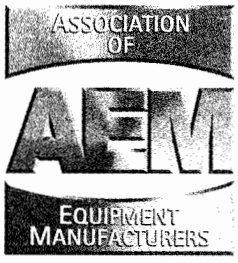
- Do not substitute common hardware for self-locking blade bolts or other special part items.
- Do not substitute blades, pins, shields or other critical safety-related parts.
- Do not use grade 5 or 8 bolts to replace grade 2 shear bolts.

FOLLOW THE SAFETY PRACTICE OF ALWAYS CHECKING THE MOWER FOR PROPER FUNCTION AFTER ALL ADJUSTMENTS REPAIRS OR SERVICE.



One Final Word

You have just finished reading the Mower Safety Manual. It is impossible for this manual to cover every potentially hazardous situation you may encounter. But, your knowledge of these safety precautions and your adherence to the basic rules of safety will help build good judgment in all situations. Our objective is to help you develop good safety habits and make you a better mower operator. The mower safety manual, safety precautions and basic rules of safety must be explained to those users or operators who cannot read.



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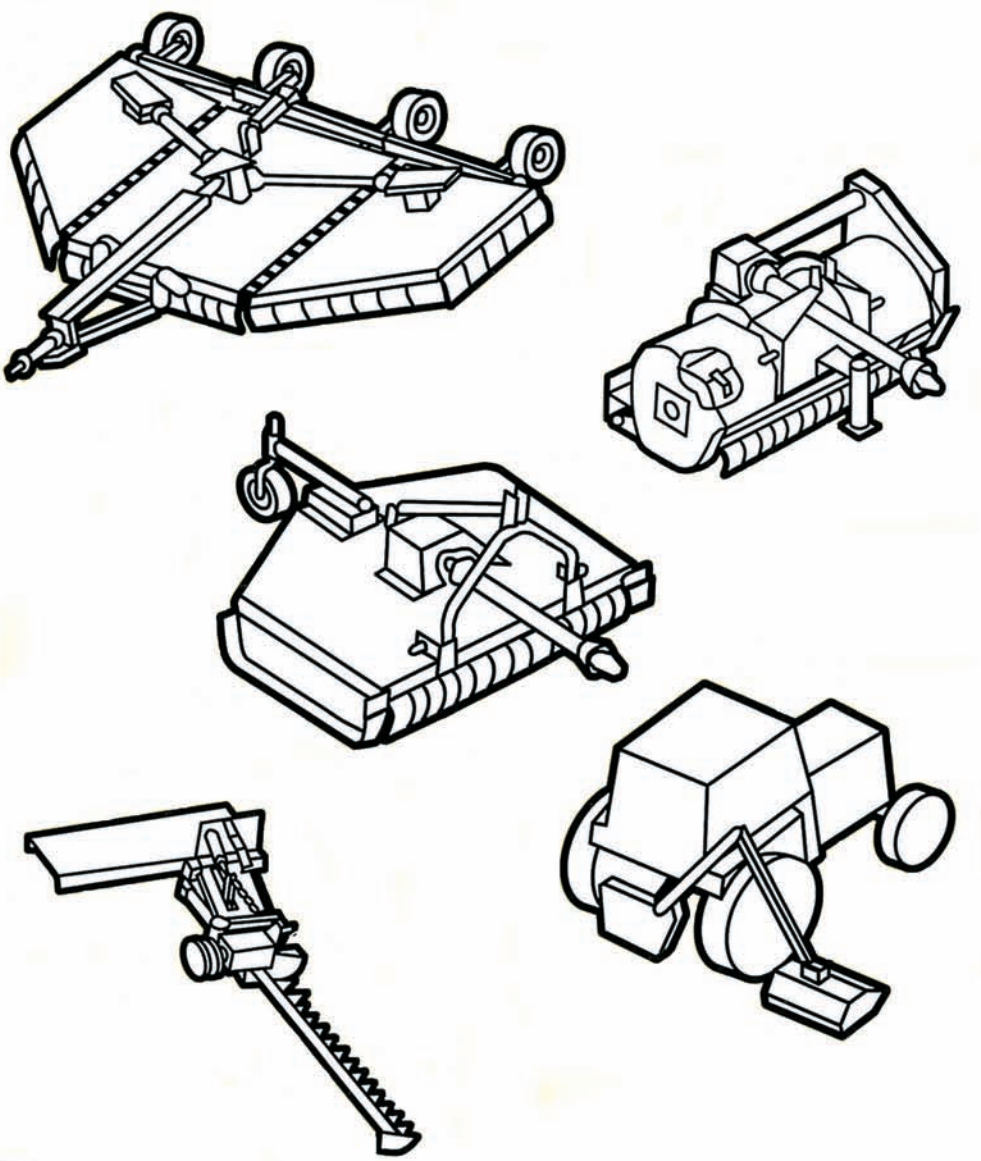

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Reconocimiento

Deseamos extender nuestro reconocimiento a los miembros de del Association of Equipment Manufacturers por sus contribuciones para la preparación de este manual de seguridad.

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Introducción

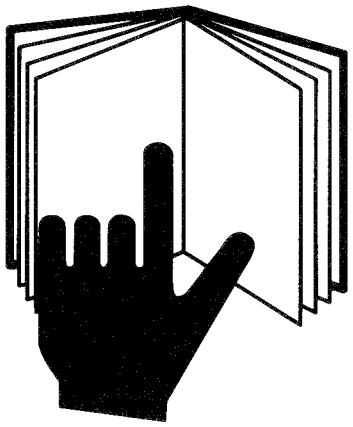
El propósito de este manual de seguridad es señalar algunas de las situaciones básicas de seguridad que pueden ocurrir durante la operación y mantenimiento de su máquina y sugerir los métodos posibles para tratar estas situaciones. Este manual NO es un sustituto de el (los) manual(es) del fabricante.

Pueden ser necesarias algunas precauciones adicionales, o algunas instruiciones no pueden aplicar, dependiendo del equipo, dispositivos de fijación, y las condiciones del lugar de trabajo o del área en que se realiza el servicio. El fabricante no tiene control directo sobre las aplicaciones, operación, inspección, lubricación o mantenimiento de la máquina. Por lo tanto, es **SU** responsabilidad practicar buenas medidas de seguridad en estas áreas.

La información proporcionada en este manual sirve como complemento de los detalles de información específicos de su máquina que están incluidos en el (los) manual(es) del fabricante. La información adicional que pueda afectar la operación segura de su máquina puede estar incluida en las etiquetas de seguridad o en los requisitos del seguro, programas de seguridad del empleador, códigos de seguridad, leyes locales del estado/provincia y leyes nacionales, reglas y reglamentos.

IMPORTANTE: *si usted no tiene el (los) manual(es) del fabricante de su máquina específica, obtenga un manual de reemplazo con su empleador, distribuidor de equipo o el fabricante de su máquina. Mantenga este manual de seguridad y el (los) manual(es) del fabricante con su máquina.*

Palabras para el usuario



Usted tiene la responsabilidad de leer y comprender este manual de seguridad y el (los) manual(es) del fabricante, antes de operar esta máquina. Este manual de seguridad lo guía paso a paso a lo largo de su día de trabajo. El manual de seguridad, el (los) manual(es) del fabricante, avisos de seguridad (calcomanías) y precauciones de seguridad, deben explicarse a los usuarios u operadores que no puedan leer el material.

Adicionalmente al diseño y configuración del equipo el **CONTROL DEL PELIGRO** y la **PREVENCIÓN DE ACCIDENTES** dependen de la conciencia, preocupación, prudencia y capacitación adecuada de los propietarios y operadores durante la operación, transporte, mantenimiento y almacenamiento del equipo.

Recuerde que **USTED** es la clave para mantener la seguridad. Las buenas prácticas de seguridad no lo protegen solamente a usted sino que también a las personas que lo rodean. Estudie este manual y el (los) manual(es) del fabricante para su máquina específica. Hágalos una parte integral de su programa de seguridad. Recuerde que este manual de seguridad está escrito únicamente para segadoras industriales y agrícolas.

Practique todas las precauciones de seguridad usuales y acostumbradas en el trabajo y más que todo – recuerde que la seguridad depende de USTED. Solamente USTED puede evitar las lesiones graves o la muerte debidas a prácticas inseguras.

Advertencia de seguridad

Símbolo

Este símbolo de alerta de seguridad significa:

"¡ATENCIÓN! ¡MANTÉNGASE ALERTA! ¡SU SEGURIDAD ESTÁ INVOLUCRADA!"

El símbolo de alerta de seguridad identifica los mensajes de seguridad importantes en el equipo, en los avisos de seguridad, en los manuales y en otros lugares. Cuando usted vea este símbolo, esté alerta a la posibilidad de muerte o lesiones. Siga las instrucciones en el aviso de seguridad.

Palabras de señales

Las palabras de señales son palabras específicas que regularmente se encontrarán en las calcomanías de seguridad en este equipo o en otros equipos en el lugar de trabajo. Estas palabras tienen el objetivo de alertar a la persona que las vea de la presencia y el grado relativo de un riesgo.

⚠ PELIGRO — Esta palabra de señal indica una situación de riesgo inminente que si no es evitado podrá resultar en la muerte o lesiones graves.

⚠ ADVERTENCIA — Esta palabra de señal indica una situación potencialmente riesgosa que si no se evita podría resultar en la muerte o lesiones graves.

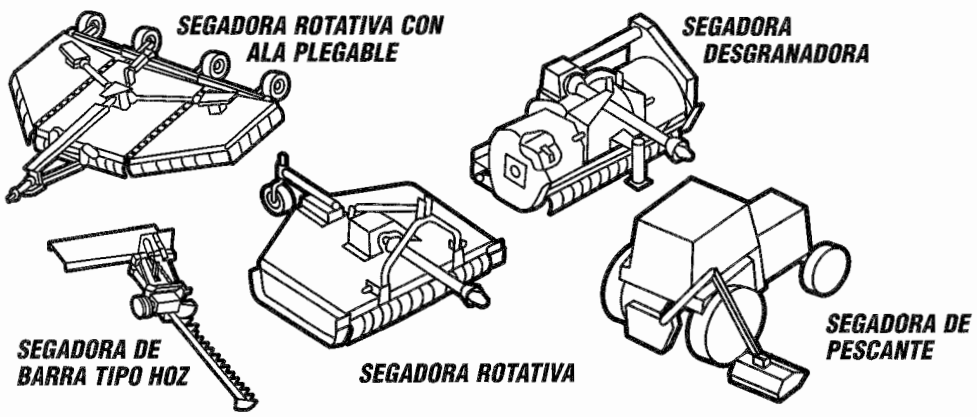
⚠ ATENCIÓN — Esta palabra de señal indica una situación potencialmente riesgosa que si no se evita podría resultar en lesiones menores o moderadas.

- **LOS ACCIDENTES PUEDEN LISIAR Y CAUSAR LA MUERTE.**
- **LOS ACCIDENTES SON COSTOSOS.**
- **LOS ACCIDENTES PUEDEN EVITARSE.**

Segadoras industriales y agrícolas

Es una segadora para cortar pasto, triturar residuos de cultivos, cortar maleza para la limpieza de terrenos, vías navegables, derechos de paso, cortes en los bordes de los caminos o carreteras.

TIPOS DE SEGADORAS INDUSTRIALES Y AGRÍCOLAS:



Sea un operador responsable

Para la operación segura de su equipo usted debe ser un operador responsable. Un operador responsable debe comprender claramente las instrucciones escritas proporcionadas por el fabricante ser capacitado – incluyendo la operación real del equipo y el conocimiento de las reglas y reglamentos de seguridad del lugar de trabajo.

Las medicinas y el alcohol pueden y afectarán el estado de alerta y coordinación del operador, por lo tanto, afectarán la habilidad del operador para operar el equipo en forma segura. Un operador **NUNCA** debe usar medicinas que puedan afectar su estado de alerta, juicio y coordinación; ni beber alcohol mientras opera equipo motorizado incluyendo tractores y segadoras. Un operador que use medicamentos por prescripción médica o de venta libre debe consultar con un médico profesional para conocer sobre cualquier efecto secundario que podría limitar su habilidad para operar este equipo en forma segura. **NUNCA** permita que alguien opere este equipo cuando estén afectados su estado de juicio alerta o de coordinación.

PROTÉJASE usted mismo
LLAME si necesita asistencia
LOCALICE los equipos de primeros auxilios y el extintor de incendios

Protéjase usted mismo

Use toda la ropa protectora y los dispositivos de seguridad personal que se le proporcionen o que sean los indicados para las condiciones de trabajo.

Usted puede necesitar:

- Casco protector
- Zapatos de seguridad
- Anteojos de seguridad con protección lateral, gafas protectoras o protector facial
- Guantes extrafuertes
- Protección auditiva
- Ropa reflectora
- Equipo para clima húmedo
- Respirador o máscara filtrante

Use ropa apropiada para las condiciones del trabajo.

Siempre conozca cómo obtener ayuda en caso de una emergencia. Conozca donde encontrar y cómo usar los equipos de primeros auxilios y el extintor de incendios/sistema de supresión de incendios.

Manténgase alerta. Evite los accidentes.
No conozca la seguridad en la forma más difícil.

Manejo seguro de riesgos y peligros

Adicionalmente al diseño y configuración del equipo, el **CONTROL DEL PELIGRO** y la **PREVENCIÓN DE ACCIDENTES** dependen de la conciencia, preocupación, prudencia y capacitación adecuada de los propietarios y operadores durante la operación, transporte, mantenimiento y almacenamiento del equipo.

EL MANEJO SEGURO DE RIESGOS Y PELIGROS ES UN ELEMENTO ESENCIAL PARA LOS PROPIETARIOS Y OPERADORES RESPONSABLES DE TRACTORES Y SEGADORAS.

REVISE EL MANEJO SEGURO DE LOS PELIGROS Y RIESGOS ENUMERADOS A CONTINUACIÓN.

Peligro de objetos despedidos

EXISTE LA POSIBILIDAD DEL RIESGO DE LESIONES A LOS OPERADORES Y TRANSEÚNTES CAUSADAS POR OBJETOS DESPEDIDOS DURANTE LA OPERACIÓN DE LA SEGADORA POR LOS SIGUIENTES:

OBJETOS (PIEDRAS, ESCOMBROS, HOJAS ROTAS DE LA SEGADORA, PERNOS DE LA HOJA, CABLES, CADENAS, ALAMBRE, ETC.) DESPEDIDOS POR LA SEGADORA.

Dispositivos protectores del equipo y prácticas de seguridad recomendadas

La cubierta de la segadora y los dispositivos protectores no pueden evitar que escapen todos los objetos o desechos del área cerrada de la hoja en todas las condiciones de segado. Es posible que los objetos escapen y se desplacen cientos de pies (300 [100 m]).

PRÁCTICAS DE SEGURIDAD RECOMENDADAS

Lea los manuales del operador del fabricante para conocer las prácticas de seguridad recomendadas durante la operación. Explique las prácticas a los usuarios u operadores que no puedan leer.

PARA AYUDAR A EVITAR LESIONES GRAVES O LA MUERTE CAUSADAS POR OBJETOS QUE GOLPEEN AL OPERADOR U OTRAS PERSONAS HAGA LO SIGUIENTE:

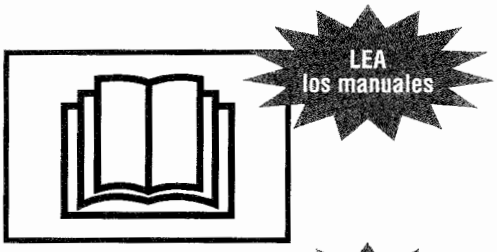
SEGURIDAD DE TRANSEÚNTES

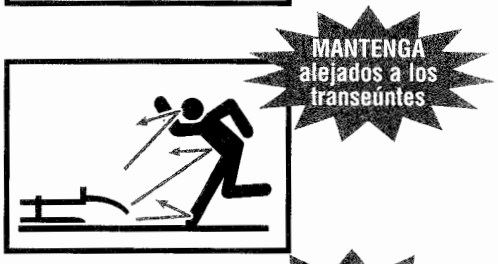
- Mantenga a los transeúntes a varios cientos de pies (300 [100 m]) del área segada.

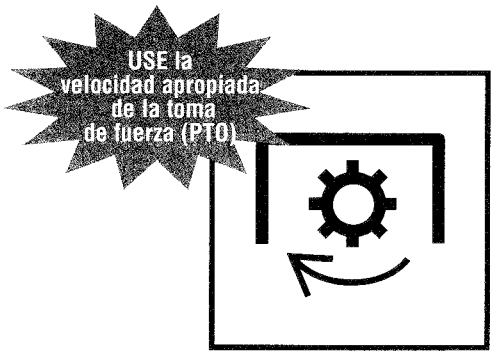
SEGURIDAD PROPORCIONADA POR LOS DISPOSITIVOS PROTECTORES DEL EQUIPO

Para contener, desviar o reducir los objetos despedidos del área cerrada de la hoja:

- Mantenga la cadena, blindajes deflectores flexibles o sólidos colocados en la parte delantera y trasera de la cubierta de la segadora, en su lugar y en buen estado de funcionamiento.
- No opere el equipo con los blindajes para objetos despedidos dañados o sin que estén colocados en su lugar.







SEGURIDAD DEL OPERADOR

La operación de las segadoras con las alas levantadas, de montaje lateral y pescante, pueden reducir la efectividad del blindaje para proteger al operador contra los objetos despedidos de la segadora.

Haga lo indicado a continuación para aumentar la protección del operador contra los objetos despedidos durante las operaciones de segado:

- Use cabinas cerradas con una estructura de protección contra vuelcos (ROPS), cubiertas protectoras especiales, mallas u otros dispositivos para proteger al operador cuando efectúa estas operaciones.

SOBREPASAR LAS VELOCIDADES RECOMENDADAS PARA LA TOMA DE FUERZA (PTO)

No sobrepase las velocidades recomendadas por el fabricante para la toma de fuerza (PTO).

Las velocidades excesivas de la toma de fuerza (PTO) pueden causar:

- Fallo de la hoja
- Escape de objetos a velocidad alta u hojas rotas despedidas del área cerrada de la hoja de la segadora.
- Fallos potenciales de la línea de transmisión de 540 rpm cuando se opera a velocidades de 750 a 1000 rpm.

OTRAS PRÁCTICAS DE SEGURIDAD:

- Nunca debe operar la segadora con hojas rotas, dobladas, faltantes o que estén extremadamente desgastadas.
- Antes de segar retire los desechos y objetos extraños para evitar que sean recogidos y despedidos por la segadora.
- No debe operar la segadora durante el transporte o en posición de ala levantada.

PRÁCTICAS DE MANTENIMIENTO RECOMENDADAS

Lea los manuales del operador del fabricante para conocer sobre la inspección y mantenimiento de las defensas de la cadena y blindaje deflector flexible o sólido:

- Reemplace las defensas desgastadas o dañadas y los demás blindajes antes de segar.
- Use solamente las defensas y blindajes de reemplazo del fabricante. Otras defensas o blindajes pueden no encajar, o los materiales pueden no ser adecuados para cumplir con los requisitos de resistencia del equipo.
- Reemplace las calcomanías desgastadas o dañadas y las instrucciones de advertencia.
- Explique las instrucciones de inspección y mantenimiento a los usuarios u operadores que no puedan leer.

Peligros y riesgos de las hojas rotativas y línea de transmisión

EXISTE EL RIESGO DE POSIBLES LESIONES A LOS OPERADORES DE LA SEGADORA Y TRANSEÚNTES DURANTE LAS OPERACIONES DE SEGADO CAUSADAS POR LO SIGUIENTE:

- **CONTACTO DEL CUERPO CON LAS HOJAS ROTATIVAS.**
- **ENREDO DEL CUERPO CON LAS LÍNEAS DE TRANSMISIÓN Y PIEZAS ROTATIVAS.**

Dispositivos protectores del equipo y prácticas de seguridad recomendadas

PRÁCTICAS DE SEGURIDAD RECOMENDADAS

Lea los manuales del operador del fabricante para conocer las prácticas de seguridad recomendadas. Explique las prácticas a los usuarios u operadores que no puedan leer. Para evitar el riesgo de lesiones graves o la muerte causadas por el contacto con la hoja en movimiento, línea de transmisión o enredo de los operadores u otras personas haga lo siguiente:

SEGURIDAD DE TRANSEÚNTES

- No debe operar cerca de transeúntes.
- Mantenga a otras personas a varios cientos de pies (300 [100 m]) del área de segado.

PRÁCTICAS DE SEGURIDAD DEL OPERADOR

- No permita pasajeros en el tractor o segadora. Asegúrese el cinturón de seguridad durante el segado.
- Use la práctica de parada del equipo apropiada antes de dar servicio, ajustar, limpiar o eliminar las obstrucciones de la segadora.
- Mantengase alejado de las hojas rotativas, piezas y líneas de transmisión.
- Nunca arranque el motor del tractor mientras esté de pie al lado del equipo.
- Solamente arranque el motor del tractor cuando esté sentado en el asiento del operador con el cinturón de seguridad abrochado.

PRÁCTICAS DE SEGURIDAD RECOMENDADAS PARA DEFENSAS Y BLINDAJES DE LA LÍNEA DE TRANSMISIÓN

- Mantenga las líneas de transmisión y otros blindajes colocados y en buen estado.
- No debe operar la segadora cuando las defensas, defensas de la línea de transmisión u otros blindajes hagan falta o estén dañados.

PRÁCTICAS DE SEGURIDAD RECOMENDADAS

Lea los manuales del operador del fabricante para conocer las instrucciones sobre defensas, defensas de la línea de transmisión y otros blindajes:

- Reemplace las defensas, defensas de la línea de transmisión y otros blindajes desgastados o dañados antes de segar.
- Use solamente defensas y blindajes de reemplazo hechas por el fabricante. Otras defensas o blindajes pueden no encajar o ser de materiales inadecuados que no cumplan con los requisitos de resistencia del equipo.
- Reemplace las calcomanías e instrucciones de advertencia desgastadas o dañadas.
- Explique las instrucciones de inspección y mantenimiento a los usuarios u operadores que no puedan leer.

EVITE vuelcos
USE la estructura contra vuelcos (ROPS) del tractor
LEA los manuales
AGREGUE balasto
AUMENTE el espacio entre las ruedas y AGREGUE balasto en el lado contrario
ASEGÚRESE EL cinturón de seguridad
EVITE EL APLASTAMIENTO asegure el ala

Peligros y riesgos de rodamiento o vuelco del tractor y segadora

EXISTE UN RIESGO DE LESIONES POSIBLES AL OPERADOR POR RODAMIENTO O VUELCO DE LA SEGADORA DURANTE LAS OPERACIONES DE SEGADO POR LO SIGUIENTE:

- **TERRENO ACCIDENTADO, PENDIENTES INCLINADAS, AGUJEROS, BACHES, SURCOS, PIEDRAS, TRONCOS U OTRAS OBSTRUCCIONES QUE PODRÍAN VOLCAR EL TRACTOR Y SEGADORA.**
- **VELOCIDADES ABSOLUTAS EXCESIVAS PARA ESTAS CONDICIONES DE TERRENO.**

Dispositivos protectores del equipo y prácticas de seguridad recomendadas

Cuando sea posible, retire los troncos, piedras, etc., o márquelos claramente con las demás obstrucciones para evitar vuelcos, averías y condiciones de conducción peligrosas. Tenga extremo cuidado para mantener el control sobre el equipo cuando opere en terrenos con estas condiciones.

ESTRUCTURAS CONTRA VUELCOS (ROPS) RECOMENDADAS PARA TRACTORES

Un tractor equipado con una estructura contra vuelcos (ROPS) o cabina ROPS cerrada y cinturón de seguridad para la seguridad del operador, es esencial para la protección adicional del operador, cuando opera en terrenos con estas condiciones

AJUSTES RECOMENDADOS PARA LA ESTABILIDAD DEL TRACTOR

Lea el manual del operador del tractor para conocer los ajustes para aumentar la estabilidad del tractor:

- Agregue pesas o balasto a las ruedas delanteras y traseras.
- Ajuste el espacio entre las ruedas al ancho máximo.
- Agregue contra balasto en el lado contrario a las segadoras de montaje lateral y de pescante.
- Explique los ajustes a los usuarios u operadores que no puedan leer.

PRÁCTICAS DE SEGURIDAD RECOMENDADAS

Lea los manuales del operador del fabricante para conocer las prácticas de seguridad de operación recomendadas. Explique las prácticas a los usuarios u operadores que no puedan leer. **Para evitar lesiones graves o la muerte del operador por el vuelco del tractor y segadora, haga lo siguiente:**

- Abroche firmemente el cinturón de seguridad cuando segue con tractores equipados con una estructura contra vuelcos (ROPS).
- Evite la velocidad absoluta excesiva de acuerdo con las condiciones del terreno.
- Evite los arranques, paradas y virajes repentinos cuando opere subiendo, bajan do o atravesando pendientes.
- Evite las condiciones de terreno resbaloso.
- Haga virajes anchos y graduales.
- Planifique segar cuesta abajo en pendientes inclinadas para evitar los vuelcos.

Peligros y riesgos de aplastamiento por una segadora o piezas desprendidas

EXISTE EL RIESGO DE UNA LESIÓN POR APLASTAMIENTO PARA LOS OPERADORES Y OTRAS PERSONAS DURANTE LAS OPERACIONES DE SEGADO DEBIDO A LO SIGUIENTE:

- **SEGADORA O EQUIPO DESPRENDIDO DEBIDO A FALLO DEL SISTEMA HIDRÁULICO.**
- **FALLO EN DAR SOPORTE, BLOQUEAR O ASEGURAR COMPLETAMENTE LA SEGADORA O PIEZAS DEL EQUIPO.**

Dispositivos protectores del equipo y prácticas de seguridad recomendadas

Lea los manuales del operador del fabricante para conocer las prácticas de seguridad de operación recomendadas. Explique las prácticas a los usuarios u operadores que no puedan leer. **Para ayudar a evitar lesiones serias o la muerte de los operadores y otras personas causadas por la caída de la segadora o piezas de equipo, haga lo siguiente:**

PRÁCTICAS DE SEGURIDAD RECOMENDADAS

Antes de trabajar cerca o debajo de la segadora o piezas de equipo en posición levantada:

- Use la práctica de parada del equipo apropiada antes de dar servicio, ajustar, limpiar o eliminar las obstrucciones de la segadora.
- Soporte o coloque bloques firmemente debajo de la segadora o piezas de equipo.
- En las segadoras de tipo ala coloque bloques o asegure firmemente las alas con los seguros o baje al suelo la segadora o piezas del equipo.
- Use los seguros de transporte cuando transporte la segadora en caminos públicos.

Peligros y riesgos por la fuga de fluido hidráulico a presión alta

EXISTE UN RIESGO PARA LOS OPERADORES DE SEGADORAS Y OTRAS PERSONAS DE UNA POSIBLE INYECCIÓN DE FLUIDO A PRESIÓN ALTA O GANGRENA CAUSADA POR LA INYECCIÓN EN LA PIEL DE ACEITE HIDRÁULICO O DIESEL.

PARA EVITAR LA GANGRENA, EL FLUIDO INYECTADO DEBE SER ELIMINADO QUIRÚRGICAMENTE EN POCAS HORAS, POR UN MÉDICO FAMILIARIZADO CON ESTE TIPO DE LESIÓN.

PRÁCTICAS DE SEGURIDAD RECOMENDADAS

Lea los manuales del operador del fabricante para conocer las prácticas de seguridad recomendadas. Explique las prácticas a los usuarios u operadores que no puedan leer. Las fugas de fluido a presión alta por agujeros minúsculos pueden ser casi invisibles.

Para ayudar a evitar lesiones serias o la muerte haga lo siguiente:

- Busque las fugas con pedazos de cartón o madera.
- No use las manos para verificar la presencia de fugas.
- Descargue la presión del sistema antes de desconectar los conductos.
- Antes de aplicar presión al sistema:
  - Revise que los conductos, tuberías y mangueras no estén dañados.
  - Revise que las conexiones estén apretadas.
- Antes de operar los sistemas presurizados:
  - Descargue el aire del sistema.
  - Haga referencia al (los) manual(es) del operador del fabricante para obtener instrucciones.
  - Explique los procedimientos a los usuarios u operadores que no puedan leer.

Peligros y riesgos durante el llenado de combustible del tractor

Para evitar las lesiones serias o la muerte por incendio durante el llenado:

- Apague el motor y la ignición.
- Nunca llene el tanque de combustible cerca de llamas descubiertas.
- Nunca fume mientras llena combustible.
- Evite las chispas causadas por la electricidad estática poniendo a tierra la boquilla del combustible contra el cuello de llenado del tanque.
- Evite sobrellenar el tanque o derramar el combustible.
- Limpie inmediatamente el combustible derramado.
- Siempre vuelva a colocar la tapa del combustible.

Para evitar lesiones serias o la muerte causadas por las emanaciones del escape del motor:

- Ventile adecuadamente los espacios cerrados antes de arrancar el motor.

Cumpla con un programa de seguridad

LA SEGURIDAD ES IMPORTANTE PARA LOS PROPIETARIOS Y OPERADORES RESPONSABLES DE TRACTORES Y SEGADORAS. HAGA LO SIGUIENTE PARA SU SEGURIDAD DURANTE LA OPERACIÓN DE SEGADO:

SEA UN OPERADOR CAPACITADO HACIENDO LO SIGUIENTE:

- Leyendo, comprendiendo y obedeciendo las instrucciones escritas del abricante en el (los) manual(es) del operador y avisos de seguridad en la segadora y tractor.
- Recibiendo capacitación operativa para la segadora y tractor.
- Solicitando a su distribuidor de equipo o supervisor que le explique lo que usted no comprende.
- Explicando las instrucciones escritas en el (los) manual(es) del operador y avisos de seguridad (calcomanías) en la segadora y tractor a los usuarios u operadores que no puedan leer.

Seguridad previa a la operación

Conozca las reglas y reglamentaciones de seguridad del lugar de trabajo

Pregunte a su supervisor sobre las reglas de seguridad de operación del equipo que usted deberá obedecer.

Algunas reglas para su seguridad y la de los demás:

- Un tractor equipado con una estructura contra vuelcos (ROPS) es necesario para la protección del operador durante las operaciones de segado.
- Conozca la capacidad y características de operación de la segadora y tractor.
- Nunca altere o desmonte el equipo de seguridad.
- Nunca permita que niños o personas no capacitadas operen una segadora o tractor.
- Nunca permita pasajeros en la segadora o tractor.
- Mantenga a otras personas alejadas de la operación de segado.
- Use la práctica apropiada para parar el equipo antes de bajarse del tractor.
- Permita que se detengan todas las piezas movibles antes de efectuar inspecciones, reparaciones o ajustes al equipo.
- Soporte o coloque bloques firmemente debajo de la segadora antes de trabajar debajo de la segadora o componentes elevados.
- Use la ropa protectora y dispositivos de seguridad personal que le han sido asignados o recomendados por el fabricante del equipo.

Conozca los controles del tractor y segadora

Conozca lo siguiente sobre su tractor y segadora:

- Función, propósito y uso de los controles.
- Velocidades seguras de operación.
- Capacidad para operar en forma segura en pendientes y terreno accidentado.
- Características de frenado y dirección.
- Espacios libres necesarios para la operación del tractor y segadora.
- Cómo detener rápidamente el equipo cuando haya una emergencia.

Use todos los dispositivos de seguridad del equipo disponibles

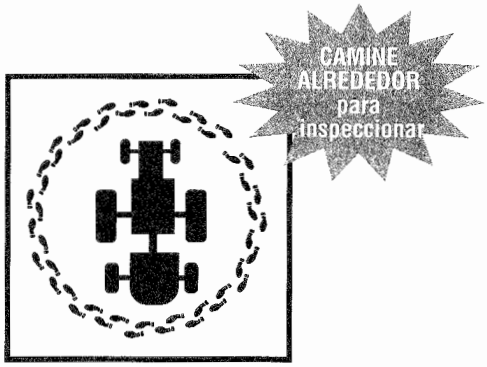
Para ayudar a mantener su seguridad y la de las personas que lo rodean:

- Asegúrese de que las defensas, blindajes y avisos de seguridad recomendados por el fabricante están instalados en el equipo y en buen estado.
- Mantenga todos los dispositivos protectores en su lugar y abrochados firmemente.
- **NUNCA** debe operar su equipo con los dispositivos de seguridad sin colocar, desconectados o dañados.
- Use el balasto y peso requerido para la estabilidad operativa del equipo.

Inspeccione el equipo de la segadora y tractor

Antes de comenzar su día de trabajo:

- Revise que no haya piezas del tractor y segadora que estén sueltas, rotas, dañadas o que no estén colocadas en su lugar.
- Repare o reemplace estas piezas cuando sea necesario.
- Verifique que los implementos del tractor y segadora sean los apropiados.
- Verifique que sean iguales las rpm de régimen de la toma de fuerza (PTO) a las del tractor y de la segadora.
- Revise el estado de las hojas de la segadora. Afile o reemplace de acuerdo con las recomendaciones del fabricante. Las modificaciones a las hojas como soldadura o endurecimiento de los bordes cortantes con soldadura o enderezado de las hojas dobladas, pueden reducir la resistencia de las hojas y afectar adversamente las propiedades y seguridad de las hojas.
- Verifique que todas las defensas y blindajes estén colocados en su lugar y que todo el equipo esté en buen estado de funcionamiento. Esto incluye la línea de transmisión de la toma de fuerza (PTO), caja de engranajes, defensas y blindajes del implemento que sirven para la protección del operador.
- Verifique que la horqueta de la línea de transmisión y los dispositivos de seguro estén correctamente asegurados.
- Verifique que los sistemas hidráulicos del tractor y segadora no estén dañados ni tengan fugas.
- Revise y lea los avisos de seguridad y las instrucciones de advertencia.
- Explique los avisos de seguridad e instrucciones de advertencia a los usuarios u operadores que no puedan leer.



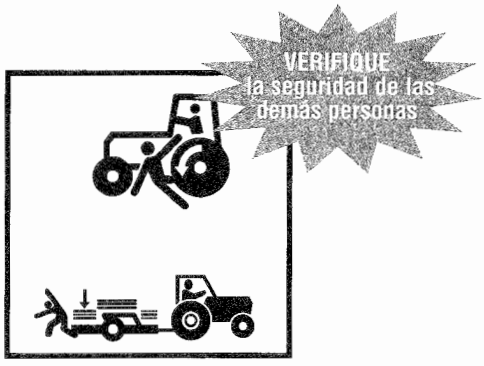
Inspeccione el área de trabajo

Inspeccione, identifique y evite las condiciones peligrosas en el área de trabajo:

- Terreno accidentado, bajadas escarpadas, zanjas, agujeros, pendientes inclinadas, troncos, agua estancada, suelo de lodo suave, condiciones resbalosas, desechos y objetos extraños.
- Inspeccione el área de segado y elimine o marque todos los objetos extraños y desechos que debe evitar con la segadora.

Analice el área de segado para establecer:

- El mejor y más seguro procedimiento de segado.
- Tipo de material y altura de segado.
- Estado del terreno de operación.
- El uso de un patrón de segado de desplazamiento hacia delante siempre que sea posible.



Verifique la seguridad de las demás personas

Antes de arrancar el equipo:

- Camine alrededor del equipo.
- Verifique que no haya nadie debajo, sobre o cerca del equipo.
- Aleje a todas las personas de estas áreas.
- Haga sonar una alarma.

Seguridad durante la subida al tractor

Antes de subir:
- Límpiese los zapatos y las manos.

Durante la subida y la bajada del tractor:
- Use las asas y placas de los escalones.
- Nunca utilice los volantes de dirección o controles como asas.
- Nunca suba ni baje de un tractor en movimiento.

Prueba de seguridad de los controles del tractor y segadora

Antes del arranque:
- Ajuste y abroche el cinturón de seguridad en su tractor equipado con una estructura contra vuelcos (ROPS).
- Verifique que el freno de estacionamiento esté enganchado.
- Verifique que desenganche la toma de fuerza (PTO).
- Verifique que todos los controles estén en la posición de punto muerto (N) o de estacionamiento (P).
- Advierta a las demás personas presentes en el área antes de arrancar el tractor.
- Cumpla con los procedimientos de arranque recomendados por el fabricante del tractor.

Después del arranque:
- Revise que todos los instrumentos, indicadores y luces indicadoras funcionen normalmente.
- Revise que todos los controles, dirección y frenos del tractor funcionen apropiadamente.
- Repare un tractor que no esté funcionando apropiadamente antes de usarlo.
- Suba y baje la segadora cuando la línea de transmisión llegue al fondo o cuando existen problemas de enganche.
- Verifique que su equipo no vibre excesivamente y que no tenga ruidos anormales.
- Use prácticas apropiadas para detener el equipo antes de inspeccionarlo.

Seguridad en el sistema de toma de fuerza y segadora

Tractores con sistemas de doble velocidad (540 ó 1000 rpm) toma de fuerza (PTO) de cambios.

Para evitar las lesiones serias o la muerte por el fallo de piezas causado por la sobrevelocidad de la segadora:
- Asegúrese de colocar el selector de la toma de fuerza (PTO) a la velocidad de régimen de las rpm de la toma de fuerza (PTO).

Tractores con sistemas con toma de fuerza (PTO) impulsados por la transmisión.
Una segadora rotativa tendrá un efecto significativo de volante, que puede continuar impulsando el tractor cuando tiene un sistema de toma de fuerza (PTO) impulsado por la transmisión.

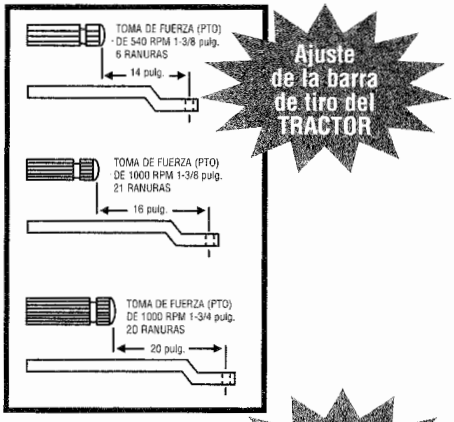
El tractor debe estar equipado y ser operado como se indica a continuación:
- Instale un embrague de sobremarcha.
- Permítase suficiente espacio y tiempo para maniobrar anticipando los virajes, paradas y reducciones de velocidad.

Seguridad durante la operación

Seguridad durante el enganche de la segadora al tractor

Seguridad en el montaje de la segadora con un enganche de tres puntos:

- Haga referencia a los manuales de los fabricantes de la segadoras y el tractor.
- Coloque la palanca selectora del elevador de potencia hidráulica del tractor (eje de balancín) en posición baja para evitar el movimiento inesperado.
- Explique los procedimientos de enganche a los usuarios u operadores que no puedan leer.



Seguridad en el montaje de la segadora con enganche de tipo tiro:

- Haga referencia a los manuales del fabricante de la segadora y tractor.
- Utilice solamente un enganche de barra de tiro.
- No la enganche al eje trasero del tractor ni a los brazos del enganche de tres puntos.
- Ajuste la longitud de la barra de tiro del tractor para la operación de la toma de fuerza (PTO) de 540 ó 1000 rpm.

Comience el uso de la segadora en forma correcta para mayor seguridad

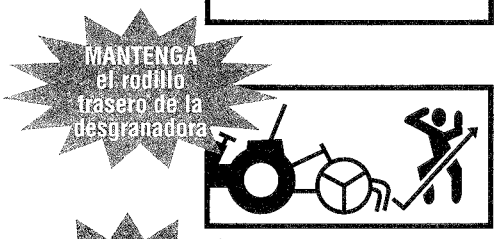
Segue solamente durante el día o cuando exista iluminación artificial adecuada.

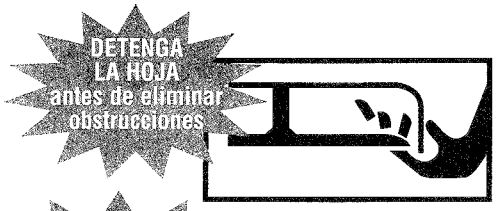
Para evitar las lesiones serias o la muerte causadas por objetos despedidos por la segadora o contacto con las hojas:

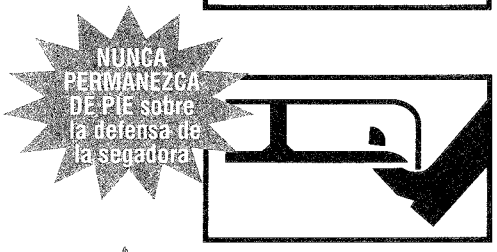
- Mantenga los blindajes de la cadena, blindajes deflectores flexibles o sólidos,
- conductos de descarga, colocados en su lugar y en buen estado.
- Mantenga a todas las personas a varios cientos de pies (300 [100 m]) de la operación de segado.
- Nunca dirija hacia ninguna persona la descarga de la segadora.
- Mantenga las manos, pies y otras partes del cuerpo alejadas de las piezas rotativas, hojas y agujeros de descarga.
- No debe operar la segadora en posición de transporte.

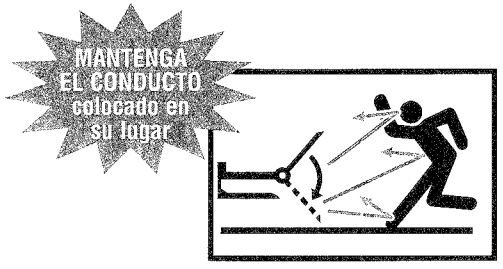
Enganche de la transmisión, toma de fuerza (PTO) de la segadora:

- Suba la segadora a la altura máxima de corte.
- Enganche la toma de fuerza (PTO) con rpm bajas del motor.
- Aumente las rpm del motor a la velocidad de régimen de las rpm de la toma de fuerza (PTO).
- Baje la segadora a la altura de corte deseado.
- Deténgase y pare inmediatamente si la segadora golpea una obstrucción.
- Inspeccione y repare cualquier daño que tenga la segadora antes de reiniciar el segado.
- No debe operar la segadora cuando tenga vibración excesiva o ruidos anormales.









Seguridad durante el segado en marcha atrás

Evite segar en marcha atrás siempre que sea posible.

Haga lo siguiente cuando segue en marcha atrás:

- Verifique que no haya personas atrás de la segadora antes de dar marcha atrás.
- Use extremo cuidado al invertir la dirección del segado.
- Mantenga los blindajes de seguridad delanteros y traseros y los blindajes delanteros de la desgranadora y los rodillos traseros de la segadora rotativa.

Velocidad absoluta de segado

La velocidad absoluta depende de las condiciones del terreno, tipo de pasto, densidad y la altura de corte:

- El alcance normal de la velocidad absoluta es de 2 a 5 mph.
- La velocidad absoluta debe ser menor cuando segue pasto alto y denso.
- La velocidad absoluta puede ser mayor cuando segue pasto de altura mediana, delgado y cuando las condiciones del terreno sean uniformes.
- Use una velocidad absoluta menor cuando segue en pendientes accidentadas o terreno desconocido.

Segado de pasto extremadamente alto

- Puede ser necesario segar dos veces el pasto extremadamente alto.

Primera pasada de segado:

- Haga un corte alto al pasto (10-15 pulgadas [25-38 mm]) para evitar objetos escondidos.

Segunda pasada de segado:

- Retire los desechos y otros objetos.
- Corte el pasto a la altura deseada y a 90 grados de la primera pasada siempre que sea posible.
- Use las prácticas apropiadas de parada del equipo para su seguridad al bajar del tractor.

Vigile los espacios libres del equipo

Las segadoras con enganche de tres puntos y de montaje lateral tienen un arco de viraje mayor que las segadoras de tiro. Permita suficiente espacio libre para virar con seguridad.

Seguridad en el uso de las segadoras montadas en la parte inferior

Cuando segue con una segadora montada en la parte inferior:

- Mantenga el conducto de descarga desmontable colocado en su lugar sobre el agujero de descarga.
- Nunca permanezca de pie sobre la cubierta de una segadora que esté en operación.
- Distribuya el pasto cortado con el conducto de descarga hacia el área ya segada.
- Use las prácticas apropiadas para la parada del equipo antes de eliminar las obstrucciones de la segadora o conducto de descarga.

Riesgos y peligros de obstrucciones elevadas cuando se usan segadoras de ala o pescante

Verifique que no haya obstrucciones elevadas cuando use segadoras con alas levantadas o de tipo pescante, para evitar lesiones graves o la muerte causadas por el contacto con:

- Líneas de transmisión de energía eléctrica.
- Ramas bajas de árboles.
- Otras obstrucciones elevadas.

Seguridad en el uso de las segadoras de ala y de montaje lateral

Cuando utilice segadoras de ala y de montaje lateral:
Las posiciones con el ala levantada reducen la protección del blindaje y aumentan los riesgos de objetos despedidos y de contacto con la hoja.

Para evitar las lesiones serias o la muerte causadas por objetos despedidos o contacto con la hoja por la subida y bajada de las alas durante las operaciones de segado:

- No segue cuando haya transeúntes en el área de segado.
- Asegúrese de que no haya personas cerca cuando suba o baje las alas.
- Mantenga el período de tiempo durante el que está expuesta la hoja rotativa del ala, a un mínimo práctico durante las operaciones de segado con el ala levantada.
- Detenga el segado si entran personas en el área de segado.
- Solamente suba el ala para pasar sobre objetos que se encuentren en el camino de segado o para seguir la inclinación del terreno.
- Desenganche la transmisión del ala durante los períodos prolongados de segado con las alas levantadas.
- Después de pasar sobre un objeto o sobre inclinaciones del terreno, baje el ala levantada, al suelo.
- Permita que todas las hojas de la segadora detengan su rotación antes de levantar las secciones del ala durante otras operaciones.

Seguridad durante el segado de los bordes de las zanjas

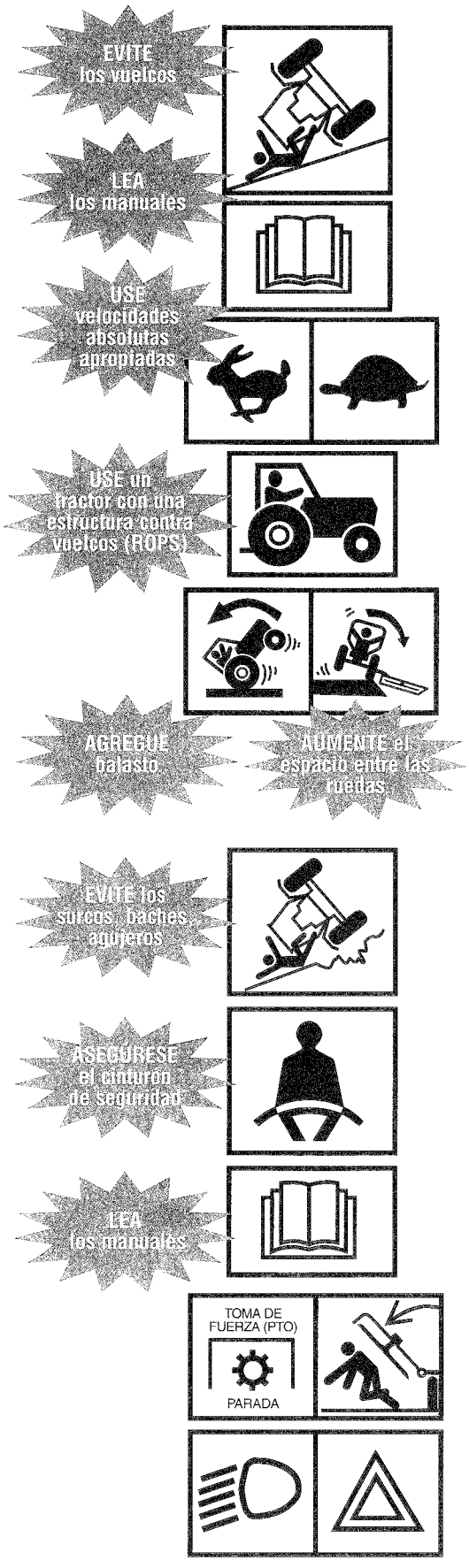
Use cuidado extremo cuando segue los bordes de las zanjas. Vigile para ver si hay derrumbes, áreas erosionadas y obstrucciones para el segado a lo largo del borde de la zanja. El extremo delantero del tractor puede desviarse hacia la zanja al golpear las obstrucciones con las segadoras de montaje lateral o de pescante.

Las operaciones con segadoras con alas levantadas y pescantes pueden reducir la efectividad del blindaje para objetos despedidos de la segadora que sirven para proteger al operador.

Para aumentar la protección del operador de objetos despedidos durante las operaciones en los bordes de las zanjas:

- Use cabinas cerradas con una estructura contra vuelcos (ROPS), cubiertas protectoras especiales y otros blindajes para el operador, cuando efectúe estas operaciones.
- Inspeccione el área de segado y retire o marque todos los objetos extraños y desechos que deben evitarse con la segadora.

CONOZCA las distancias y el espacio libre
LA ELECTRICIDAD puede ser mortal
Peligro de OBJETOS DESPEDIDOS
MANTENGA alejados a los transeúntes
EVITE golpear las obstrucciones
USE cabinas cerradas con una estructura protectora contra vuelcos (ROPS) o cubiertas protectoras


EVITE los vuelcos
LEA los manuales
USE velocidades absolutas apropiadas
USE un tractor con una estructura contra vuelcos (ROPS)
AGREGUE balasto
AUMENTE el espacio entre las ruedas
EVITE los surcos, baches, agujeros
ASEGÚRESE el cinturón de seguridad
LEA los manuales
TOMA DE FUERZA (PTO)
PARADA

Seguridad durante el segado de terreno accidentado

La estabilidad del tractor y segadora se reduce en las pendientes y terreno accidentado.

Usted puede evitar el vuelco del tractor y segadora y mantener el control de la estabilidad del equipo haciendo lo siguiente:

- Revisando los manuales del operador del tractor y segadora para conocer las prácticas de seguridad de operación en pendientes y terreno accidentado. Explique las prácticas a los usuarios u operadores que no puedan leer.
- Evitando operar en pendientes extremadamente inclinadas.
- Usando cuidado extremo para mantener el control sobre su equipo cuando opere en estas condiciones.
- Aumentando la estabilidad del tractor, agregando pesas a las ruedas y aumentando el espacio entre las mismas, (haga referencia al manual del operador del tractor para conocer las recomendaciones).
- Usando un tractor equipado con una estructura contra vuelcos (ROPS) y cinturón de seguridad para la seguridad del operador durante las operaciones de segado.
- Manteniendo una velocidad absoluta mínima.
- Haciendo virajes anchos y graduales.
- Evitando arranques, paradas y virajes repentinos cuando opere subiendo, bajando o atravesando las pendientes.
- No subiendo del suelo las segadoras montadas atrás o lateralmente ni las alas de segado durante estas operaciones.
- Manteniéndose alerta por si hubiera agujeros, baches, surcos, piedras, troncos u otras obstrucciones que podrían volcar el tractor y segadora.
- Evitando las condiciones de suelo resbaloso que podrían volcar el tractor y segadora.
- Evitando que el tractor y segadora queden atascados al pasar diagonalmente sobre declives y bajadas escarpadas pronunciadas.

Use extremo cuidado para mantener la estabilidad del equipo durante todas las operaciones sobre terreno accidentado y pendientes. Usted tiene la palabra final referente a cualquier pendiente que pueda ser trabajada en forma segura.

Seguridad durante el transporte del equipo en caminos

Si es necesario conducir el equipo sobre los caminos públicos:

- Haga referencia al manual del operador del fabricante del tractor y segadora para conocer las instrucciones.
- Explique las instrucciones a los usuarios u operadores que no puedan leer.
- Verifique las reglamentaciones locales referentes a las marcas, luces, luces intermitentes, etc., requeridas del equipo para el desplazamiento sobre caminos públicos. Se requiere de luces para las segadoras que obstruyen las luces traseras del tractor y/o las luces de advertencia.

Antes del transporte en caminos públicos:

- Desenganche la toma de fuerza (PTO) conectada a la segadora.
- Suba la segadora a la posición de transporte.
- Asegure las alas en la posición de transporte con los seguros en las segadoras de tipo ala y de montaje lateral.
- Enganche la cadena de seguridad entre la segadora de tipo tiro y el tractor.
- Asegúrese de que las luces, luces intermitentes, reflectores y avisos de vehículo de movimiento lento (SMV) están colocados y visibles.
- Revise que el emblema de vehículo de movimiento lento (SMV) sea visible para cualquier vehículo que se acerque desde atrás.

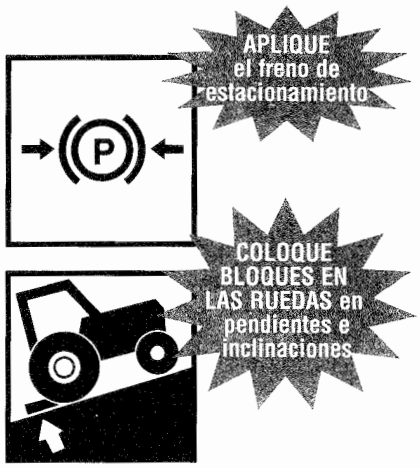
Cuando transporte en caminos públicos:
- Obedezca todas las reglamentaciones locales de tráfico.
- Acérquese a las intersecciones con precaución.
- Cumpla con los avisos de velocidad y de control de tráfico.
- Evite las paradas bruscas y doblar repentinamente.

Seguridad durante el estacionamiento

Estacione el equipo en:
- Áreas designadas o alejadas del tráfico.
- Preferentemente utilice lugares en terreno nivelado.

Lugares de estacionamiento en terreno inclinado:
- Coloque el equipo en posición transversal en las pendientes.
- Aplique los frenos de estacionamiento.
- Baje la segadora al suelo.
- Coloque bloques en las ruedas del tractor.

Antes de estacionar temporalmente y abandonar el equipo incapacitado cerca de áreas con tráfico:
- Retire el equipo de los caminos públicos.
- Coloque las banderas de advertencia.
- Use las luces intermitentes del tractor.

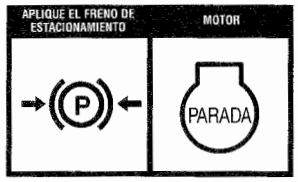


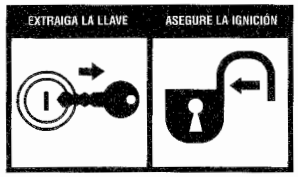
Seguridad durante la parada

Para su seguridad use las prácticas apropiadas para la parada del equipo

Haga referencia al (los) manual(es) del operador del fabricante del tractor y segadora para conocer los procedimientos de parada recomendados. Explique los procedimientos a los usuarios u operadores que no puedan leer.

Haga que los procedimientos apropiados de parada del equipo sean una costumbre importante que se debe practicar. Siga estas prácticas de seguridad antes de bajarse del tractor:
- Desenganche el embrague y transmisión de la toma de fuerza (PTO).
- Para que el motor enfríe gradualmente permita que funcione al ralentí.
- Coloque los controles en estacionamiento (P) o en punto muerto (N).
- Coloque el freno de estacionamiento.
- Baje la segadora al suelo.
- Baje al suelo las alas de las segadoras de tipo ala.
- Apague el motor.
- Espere a que todas las piezas movibles se detengan antes de efectuar inspecciones, ajustes o reparaciones al equipo.
- Descargue la presión hidráulica moviendo los controles hidráulicos varias veces en todas las direcciones.
- Asegure la ignición y extraiga la llave cuando el equipo debe ser inspecciondo, reparado, ajustado o va a permanecer desatendido.
- Asegure las cubiertas contra el vandalismo cuando el equipo permanece desatendido.
- Baje cuidadosamente manteniendo un contacto de tres puntos.





Seguridad durante la bajada del tractor

Antes de bajar del tractor haga lo siguiente:

- Para su seguridad, use las prácticas apropiadas para la parada del equipo.
- Baje el implemento al suelo, apague el motor y la toma de fuerza (PTO), aplique los frenos, permita que se detengan todas las piezas movibles y extraiga la llave antes de bajar del tractor.
- Nunca baje del equipo cuando esté en movimiento.
- Nunca salte de las máquinas.
- Baje cuidadosamente.
- Verifique que los escalones no estén resbalosos.
- Mantenga los pies y manos alejados de los controles.
- Use las asas para las manos y los escalones para bajar.
- Vea hacia la máquina y use el contacto de 3 puntos (2 manos, 1 pie ó 2 pies, 1 mano).

Seguridad durante el mantenimiento

Seguridad durante el mantenimiento

Para su seguridad haga lo siguiente antes de efectuar procedimientos de mantenimiento, reparación o servicio:

- Cumpla con la práctica apropiada para la parada del equipo.
- Use toda la ropa protectora y equipo de seguridad personal necesarios para efectuar el trabajo en forma segura.
- Haga referencia a sus manuales del fabricante para conocer los procedimientos correctos de mantenimiento, reparación y servicio. Explique los procedimientos a los usuarios y operadores que no puedan leer.

Las fuentes de energía almacenada (eléctrica, mecánica, hidráulica, neumática, química, térmica etc.) deben estar aseguradas, bloqueadas, descargadas, desconectadas, apagadas, aseguradas, neutralizadas, controladas o reducidas a un mínimo práctico, antes de efectuar con seguridad cualquier procedimiento de mantenimiento, reparación o servicio.

Algunas prácticas de seguridad básicas para evitar posibles lesiones causadas por las fuentes que emiten energía:

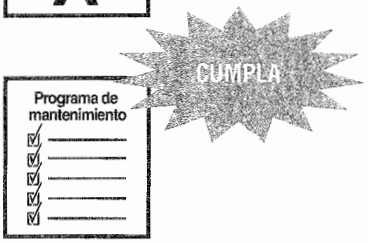
- Desenganche la toma de fuerza (PTO) antes de apagar el motor.
- Coloque los controles en estacionamiento (P) o punto muerto (N) antes de apagar el motor.
- Aplique el freno de estacionamiento o coloque bloques en las ruedas.
- Permita que todas las piezas movibles se detengan.
- Baje la segadora al suelo.
- En las segadoras de tipo ala, baje las alas al suelo.
- Apague el motor del tractor.
- Asegure la ignición y extraiga la llave.
- Observe y escuche para establecer si hay piezas en movimiento antes de abrir los blindajes.
- Soporte o coloque bloques firmemente debajo de la segadora antes de trabajar debajo de la segadora u otros componentes elevados.
- Soporte, coloque bloques o asegure firmemente las alas de la segadora con los seguros antes de trabajar cerca o debajo de una segadora de tipo ala.
- Descargue la presión del sistema hidráulico moviendo los controles varias veces en todas direcciones.
- Descargue la presión antes de desconectar o desensamblar cualquier sistema presurizado.
- Coloque bloques o descargue la presión del resorte antes de desensamblar cualquier dispositivo a resorte.
- Soporte o bloquee firmemente cualquier componente de la máquina que esté elevado, antes de trabajar en ella.
- Evite las llamas, chispas o fumar cerca de cualquier combustible.

Su seguridad y las piezas del fabricante para la segadora

La mayoría de los fabricantes de segadoras usan sujetadores y piezas especialmente diseñadas para cumplir con los requerimientos de la operación de segado.

Seguridad crítica – piezas relacionadas (pernos de la hoja autoasegurados, hojas, pasadores, blindajes u otros artículos especiales) tienen requerimientos de fuerza, diseño y encaje específicos para el estilo y modelo de la segadora que usted utiliza.

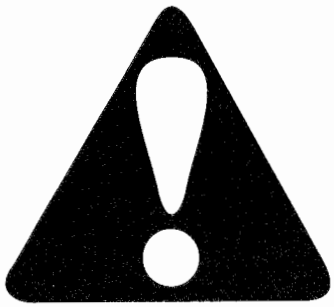
Las modificaciones o piezas para reparación que no son aprobadas por el fabricante de la segadora pueden causar un riesgo significativo por exposición a su seguridad y la de los demás.



PARA EVITAR LAS LESIONES SERIAS O LA MUERTE CAUSADAS POR PIEZAS O MODIFICACIONES NO APROBADAS:

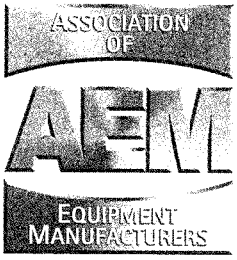
- No sustituya accesorios comunes por los pernos autoasegurados de las hojas u otras piezas especiales.
- No sustituya las hojas, pasadores, blindajes u otras piezas relacionadas con la seguridad crítica.
- No use pernos de grado 5 u 8 para reemplazar los pernos de resistencia limitada grado 2.

CUMPLA LA PRÁCTICA SEGURA DE SIEMPRE VERIFICAR EL FUNCIONAMIENTO CORRECTO DE TODOS LOS AJUSTES, REPARACIONES O SERVICIO DE LA SEGADORA.



Palabra final

Usted ha terminado de leer el manual de seguridad de la segadora. Es imposible que este manual incluya toda situación peligrosa potencial que usted pueda encontrar. Sin embargo, su conocimiento de estas precauciones de seguridad y su cumplimiento de las reglas básicas de seguridad le ayudarán a crear buen juicio para todas las situaciones. Nuestro objetivo es ayudarle a desarrollar buenos hábitos de seguridad y hacerlo un mejor operador de segadora. El manual de seguridad de la segadora, precauciones de seguridad y reglas básicas de seguridad deben explicarse a los usuarios u operadores que no puedan leer.



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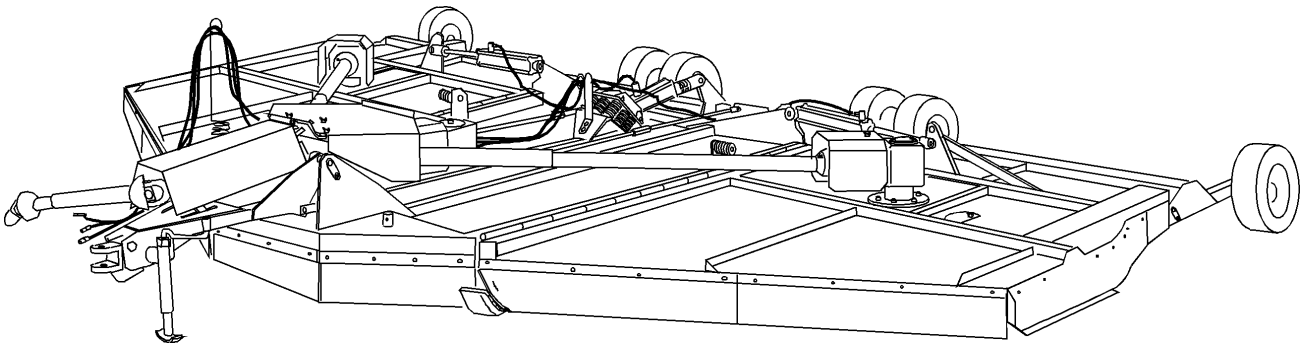
INTRODUCTION SECTION

INTRODUCTION



Your FL 20 is a heavy-duty Cutter/Shredder designed primarily for weed and grass control, brush up to 2-1/2" diameter, and shredding row crops such as cotton and corn stalks. With proper maintenance as described in this manual, your Cutter will provide you with years of dependable service with a minimum of repairs.

It is recommended that all operators of this implement read this manual or be instructed of its contents as to safety, proper operation, and maintenance before beginning operation.

Your FL 20 has been assembled for operation with a specific tractor PTO input speed, either 540 or 1000 RPM. Should you desire to change PTO input speed, contact your local Servis-Rhino dealer who will assist you in performing the necessary modifications. A different Driveline and set of Gears are required. This machine is designed for use with tractors rated 75 HP (45kW) to 100 HP (75kW) .

When ordering parts for the Gearboxes and the Drivelines, be sure to specify the PTO speed (540 or 1000 RPM) and the serial number. The serial number is located outside of the right Tongue attaching Plate on the center Mainframe section.

Chain Guards are extra equipment. Deflectors, Driveline Integral Shields, and Gearbox Shields are standard equipment and to be used at all times.

To place the warranty into effect, fill out the warranty card in full, giving all the requested information, and mail promptly. Be sure to give the serial number of this Cutter.

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ASSEMBLY SECTION

ASSEMBLY

Set up cutter as received from factory with these instructions. Refer to Parts Listing Section for further information when necessary.

Select a suitable working area. Open parts box and lay out parts to make location easy. Refer to parts listing and exploded view drawings in the Parts Listing Section and the packing list.

Cut all wire ties, including those on blades if present.

This cutter is shipped partially assembled. Assembly will be easier if components are aligned and loosely assembled before tightening hardware. Refer to Torque Chart when tightening hardware.

Position Center Section on a flat surface. Elevate approximately 10 inches from ground to permit the installation of Wing Sections.

BLADE CARRIER AND BLADES

The Frame sections are shipped from the factory without the Blades attached to the Blade Carrier to prevent damage to Blades and Blade Carrier. Optional Flat or Fan Blades are available.

WARNING Do not install Blades or do any work under the Cutter sections unless the section(s) are safely and securely blocked or latched in place.

The Blade Bolts must be tightened to 350 ft. lbs. torque before operating. NOTE: Blade Bolts have left-hand threads.

To insure proper installation, check to see that Blade cutting surfaces are correct for counterclockwise rotation on the Center Section and on the Left Wing Blade Carrier. See **FIGURE 1.** (Clockwise on Right Wing)

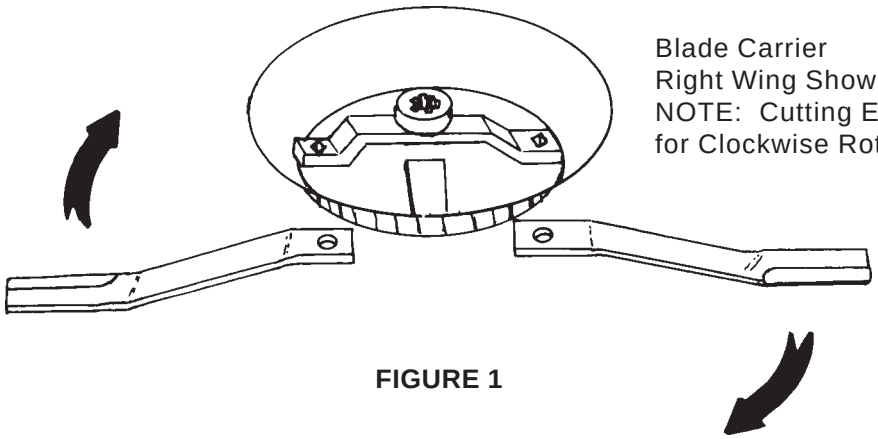

FIGURE 1

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ASSEMBLY

TONGUE ATTACHMENT

To assemble the tongue **(FIGURE 2)**. Align the lugs of the tongue with the top holes of the mainframe hitch plate (1). Insert the pivot pin (2) and fasten with 2 - 3/8" x 1 1/4" bolt (3) and 3/8" locknut (4). To assemble the control rod insert a jam nut to the short rod (5), then insert the short rod (5) into the long rod (6). Align the hole of the short control rod (5) to the top hole of the center lug on the mainframe (7). Insert pin and lock with cotter pins. Align the hole of the long rod (6) to the clevis hitch (8) and insert pin with cotter pin (9). Attach the Safety Chain (14) by looping it through the hole on the tongue and the largest link on the chain. Make certain to securely attach the hook end to the tractor when transporting.

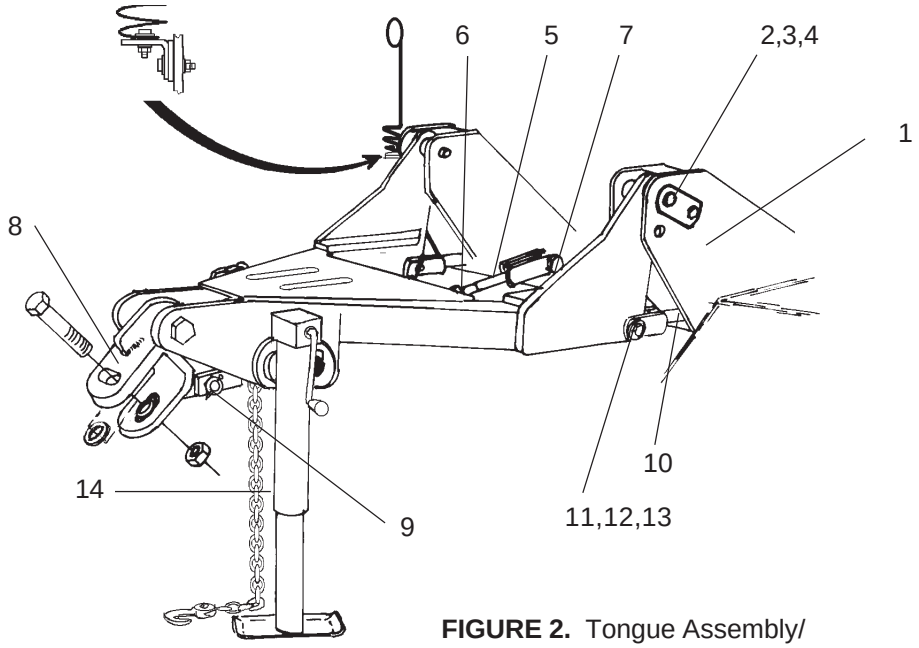

FIGURE 2. Tongue Assembly/ Level Rod Assembly

LEVEL ROD ASSEMBLY

Lay Long Level Rods (10) on Center Section frame tube and attach to Tongue with Level Rod Pins (11), washers (12), and cotter pins (13) shown in **FIGURE 2** above. Attach Jam Nuts (15) and Adjusting Nuts (16) to the Long Level Rods. Install Short Level Rods to Adjusting Nuts. Measure and adjust to the same length. Then attach the Short Level Rods to the Rear Axle with Level Rod Pins, washers, and cotter pins. **FIGURE 3** below.

Note: Control Rods must have same tension on them at all times. They can be checked by tone with a hammer. Carefully tap each control rod, and loosen or tighten the adjusting nuts as nessary until the tones from each control rod sound the same.

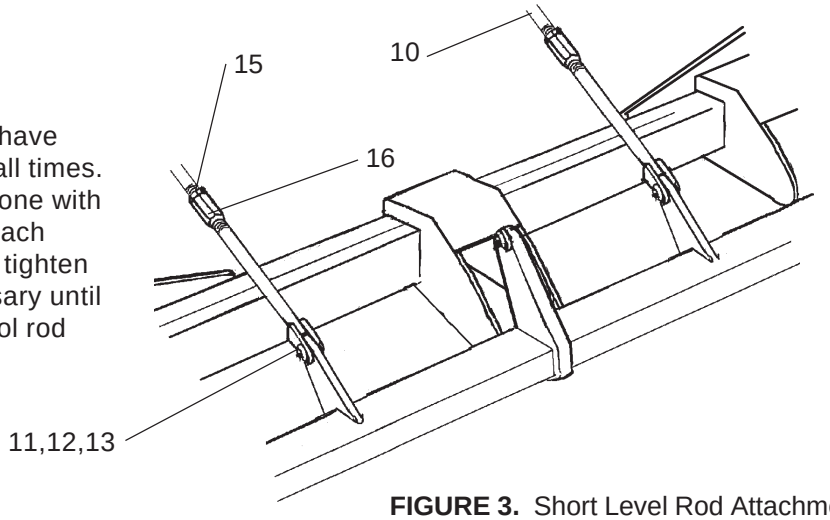

FIGURE 3. Short Level Rod Attachment To Axle

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ASSEMBLY

WING SECTIONS ATTACHMENTS

While the Center Section is still solidly blocked, attach the Wing Sections (1) in the horizontal plane. Using Hinge Pins (2), attach the Right and Left Wing Sections to the Center Sections.

NOTE: *Wing Sections may require slight lifting after the Hinge Pin is started to aid pin installation.*

Lock the Wing Sections in place with the Hinge Pins. Insert 5/16 x 1-1/2 bolt (3) and locknut (4) at the end of each of the Hinge Pins and tighten securely. **FIGURE 4.**

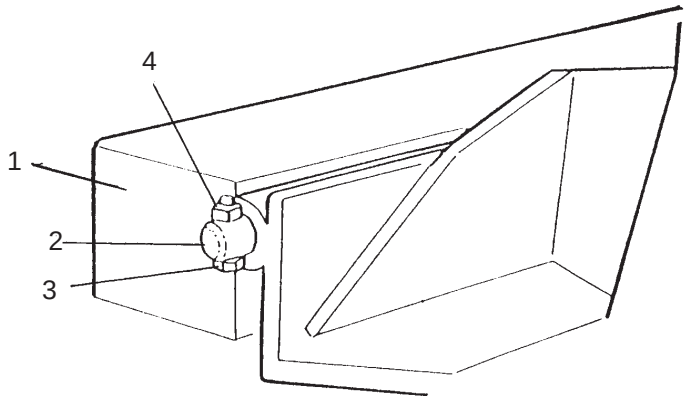

FIGURE 4. Wing Sections Attachments

HOSE BRACKET ATTACHMENT

Hose Brackets are attached in the front and rear of the cutter. The Front Hose Bracket (1) attaches to the Hose Bracket Mounting on the right side of the tongue mount (2) with Bolt (3), Washer (4) and Nut (5). The Rear Hose Bracket (6) mounts to the Lower Center Axle Spring Mount (7) with Bolt and Locknut (8) **FIGURE 5.**

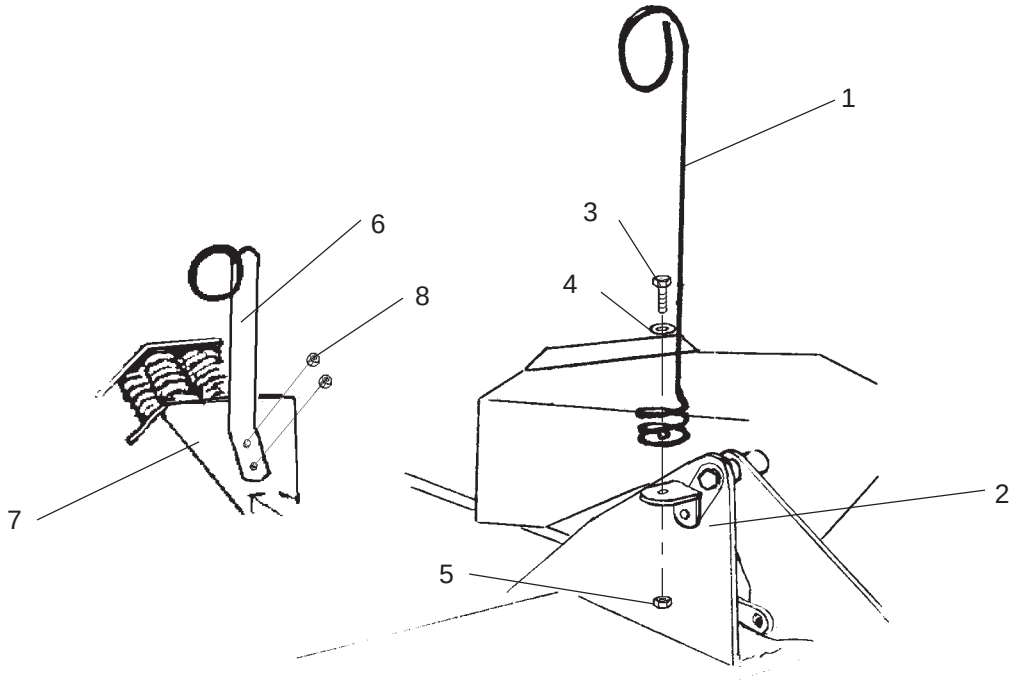

FIGURE 5. Hose Bracket mounting

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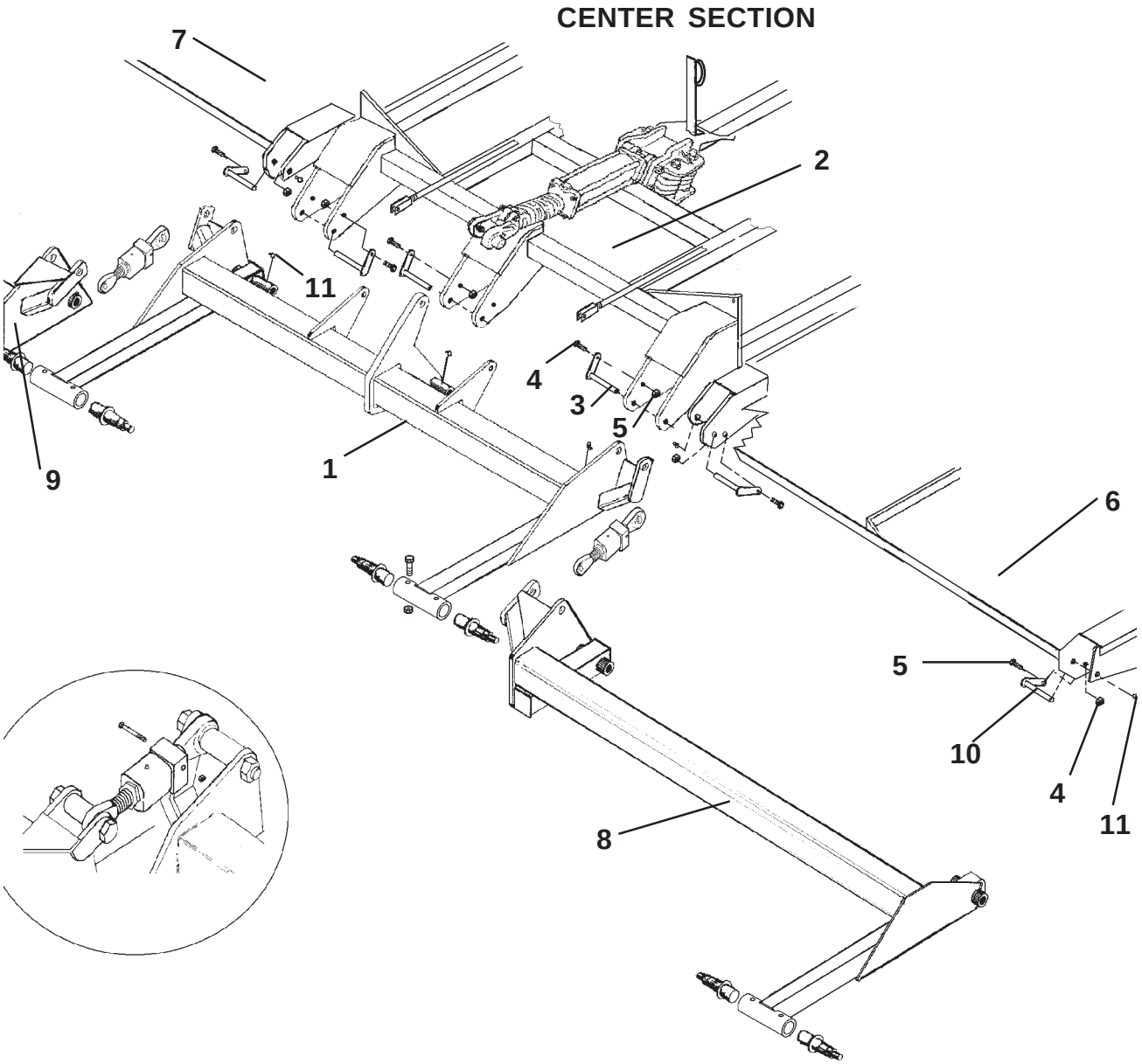

FIGURE 6. Center and Right Wing Level Lift Axle Attachment

LEVEL LIFT AXLE ATTACHMENT (FIGURE 6)

Attach the Center Level Lift Axle (1) to the Center Section (2) with the Center Pins (3), Bolts (4), and Nuts (5). The Wing Level Lift Axles (6,7) are attached to the Wing Sections (8,9) with the Wing Pins (10), Bolts (4) and Nuts (5). Install the Grease Fittings (11) on the ends of the Wing Pins, and on the bearings of the Center Section Axle (1)

To attach an axle to a section:

1. Align the axle tube pivots in the hinge area on the section.
2. Insert the Pin thru the hinge plate, the tube pivot and make it come to rest on the other hinge plate
3. Turn the Pin to align to the bolt hole as necessary and attach with nut and bolt
4. Note the lube points on the Hinge pins and lubricate as per the Maintenance Section.

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AXLE ADJUSTMENT ROD ATTACHMENT

Attach the Axle Adjustment Rod w/Bushings (1) to the Center Axle (2) and Wing Axle (3) with bolts and locknuts (4). Install Spacers (5) as shown. **FIGURE 7.**

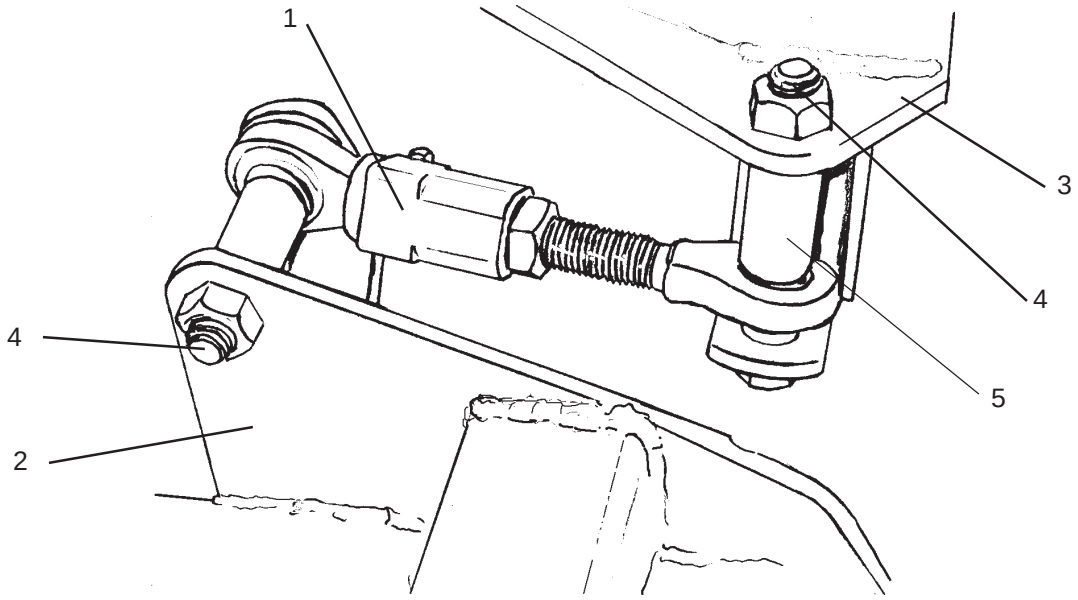

FIGURE 7. Axle Adjustment Rod Attachment
NOTE: Wing in upright position

CENTER AXLE HYDRAULIC CYLINDER ATTACHMENT

Install the clevis rod end (1) of the 8" stroke Hydraulic Cylinder to the lug on the Center Axle (2). The clevis base fastens between the flats on Spring Assembly (3) on the Center Section. **FIGURE 8.**

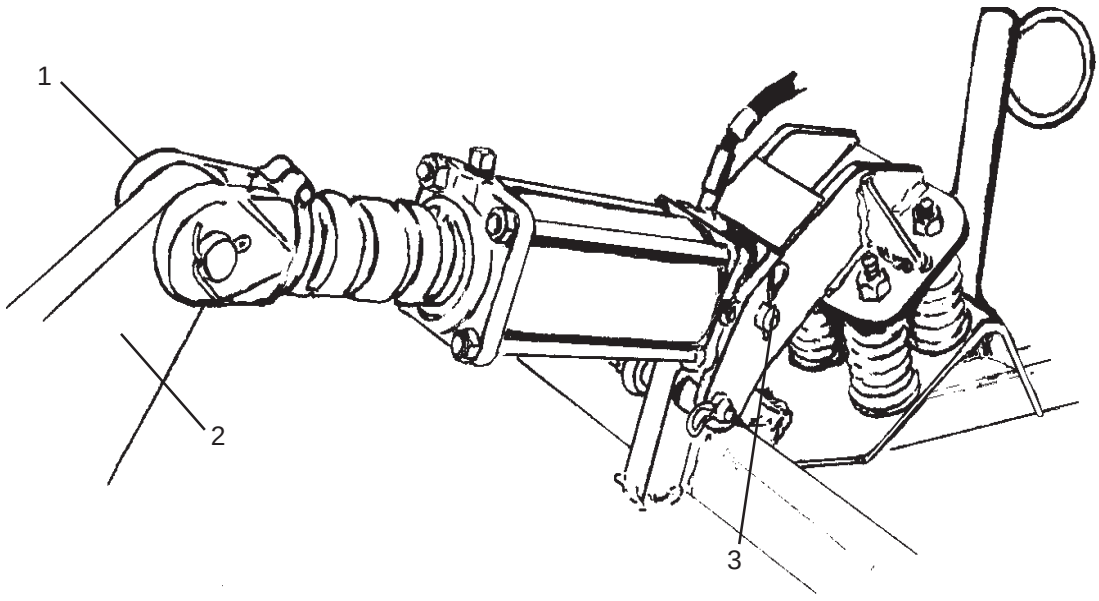

FIGURE 8. Center Axle Hydraulic Cylinder Attachment

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WING SECTION HYDRAULIC CYLINDER ATTACHMENT

Mount the 14" stroke Hydraulic Cylinder butt clevis to the upright lugs on the Center Section and the rod end to lugs on wing. Make sure the ports of the Hydraulic Cylinder are facing upwards. Keep the ports capped until the hoses are attached to the tractor and are ready to attach to the cylinder ports. Make certain that the Restrictor ,(**A**) in **FIGURE 9,** is installed properly on the gland end of the Hydraulic Cylinders to prevent fast lowering of the wings. Install the Transport Bars to retain the Wing Sections in the upright position for transport on roads and highways. When in transport keep the Center Section as low to the ground as possible to increase stability but high enough to prevent the Skid Shoes from dragging.

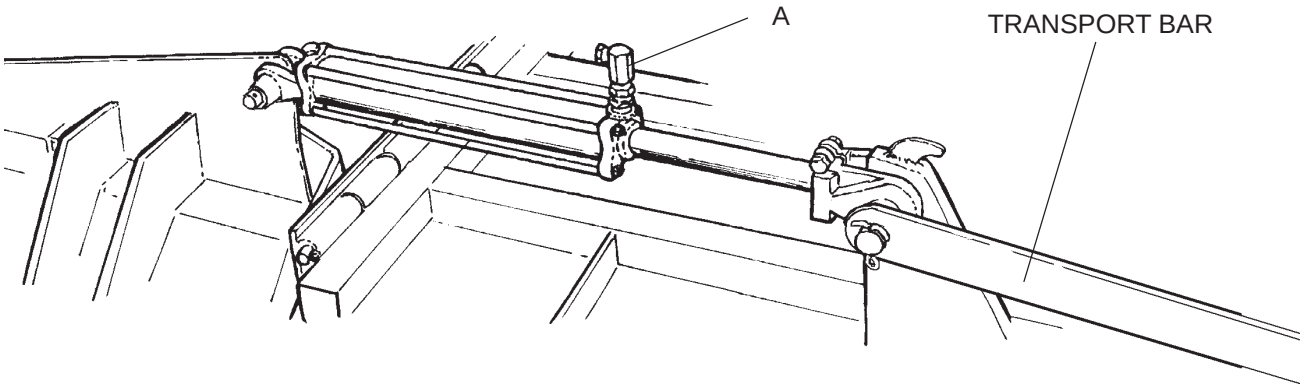

FIGURE 9. Wing Section Hydraulic Cylinder Attachment.

TIRES AND WHEELS

Before installing any tires and wheels make certain the Cutter is jacked up high enough and is securely supported. When installing the Wheel and Tire, be sure the flat side of the lug nut is against the Wheel. There are only three types of tires that can be used on this cutter DO NOT USE ANY OTHER TYPE OF TIRE OR WHEEL, such as automotive tires and rims. DO NOT EXCEED THE MAXIMUM SPEED FOR EACH TYPE OF TIRE. As excessive speed can cause damage to the machine, tire, and wheel. When installing Sectional Tires and Wheels note the direction of travel and the curvature of rubber segments in the tire and install as shown in **FIGURE 10**. Do not exceed 15 M.P.H. on Sectional Tires. When removing Airplane Tires, let all of the air out of the tire before removing lug nuts or wheel bolts or nuts. Do not exceed 20 M.P.H. on Airplane or Rib Implement Tires.

⚠ CAUTION

FAILURE TO FOLLOW SAFETY MESSAGES MAY CAUSE BODILY INJURY AND/OR TIRE AND WHEEL AND/OR EQUIPMENT DAMAGE. BE CAREFUL.

1. MAXIMUM inflation pressure 50 PSI to help prevent tire blowouts. MINIMUM inflation pressure 20 PSI.
2. MAXIMUM transport speed 20 MPH to help prevent overheating and blowouts which may cause injuries.
3. Remove valve core to make certain there is no air pressure left in tube before separating wheel halves to dismount tire. DO NOT LOOSEN WHEEL CLAMP BOLTS BEFORE PRESSURE IS REMOVED FROM TUBE AND TIRE TO PREVENT EXPLOSIVE SEPARATION OF WHEEL HALVES WITH POSSIBLE SERIOUS BODILY INJURY.
4. Never mount any other tire (such as a truck tire) on this wheel supplied with a 22-ply aircraft tire. 00762608

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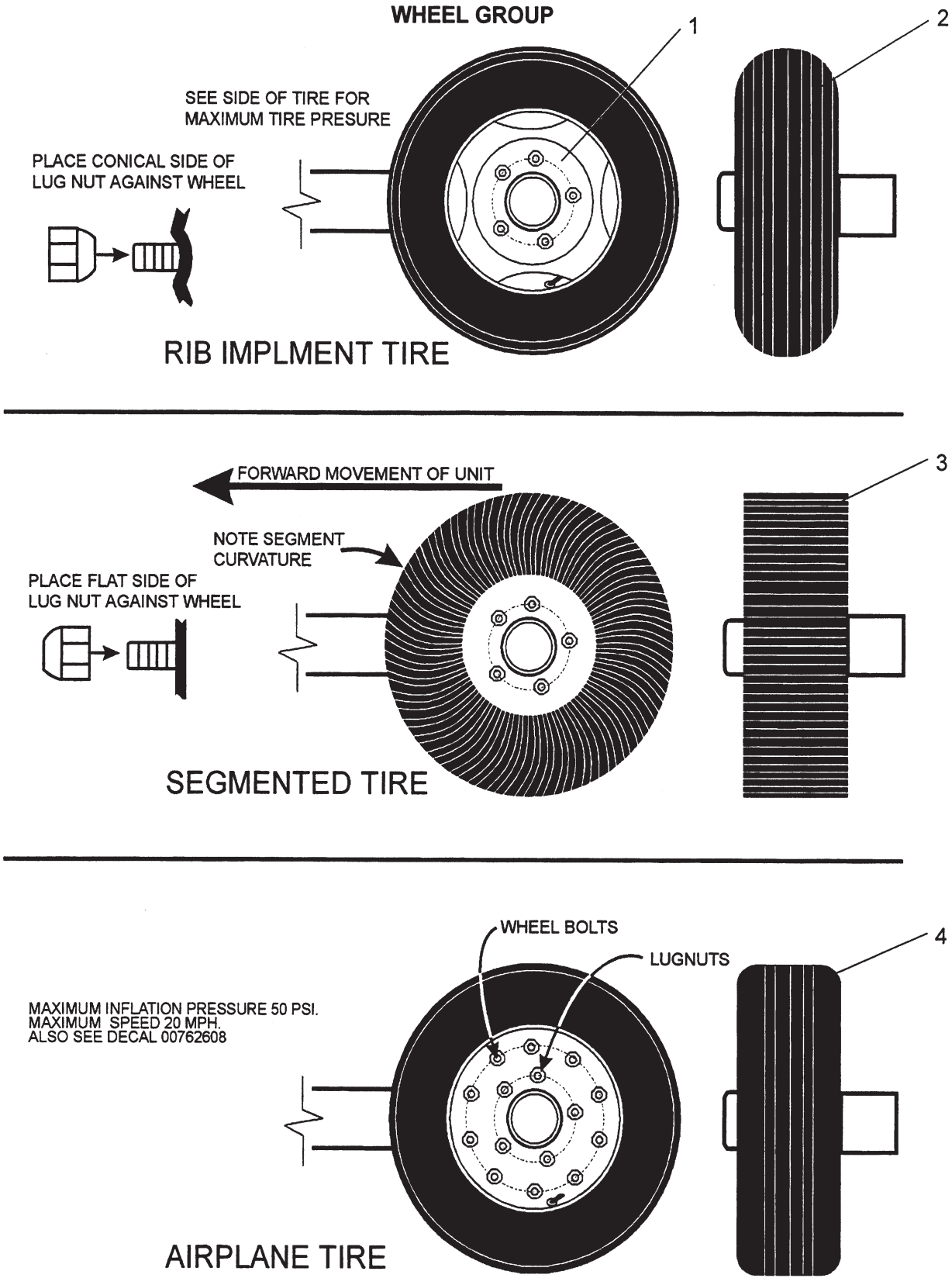
FIGURE 10. Wheel Attachment



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SPRING STOP ATTACHMENT

The Spring Stop is assembled to the stop bracket (1) with the 1/2 x 5 1/2 capscrew (2) inserted thru the stop (3) , spring (4) and locknut (5). **FIGURE 11.**

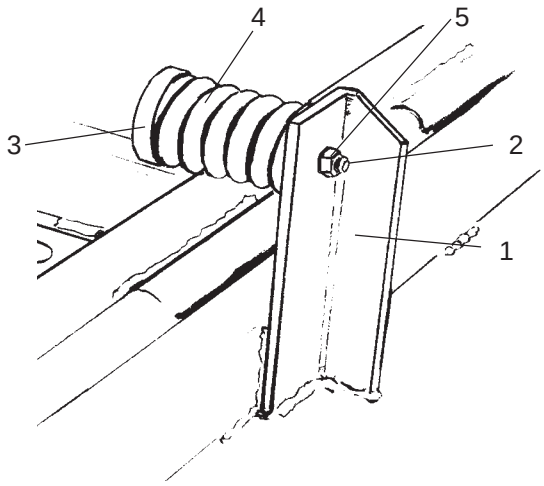

FIGURE 11. Spring Stop Attachment

BAFFLE KIT ASSEMBLY (OPTIONAL)

The Center Baffle (1) is attached to the left side of the Center Section with Bolts (2), Washers (3) and Nuts (4) as shown in **FIGURE 12**. The Wing Baffles (1) are attached to the wings with Bolts (2), Washers (3) and Nuts (4) as shown in **FIGURE 13**.

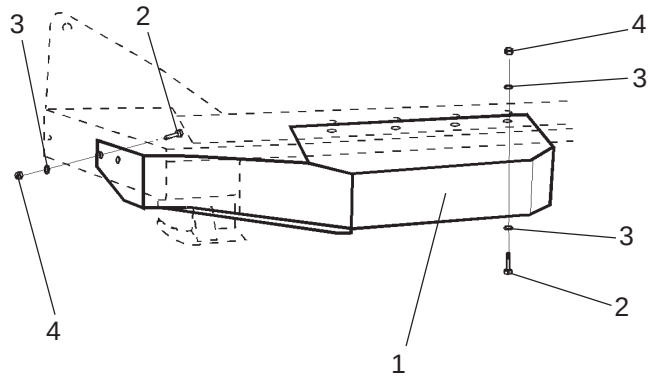

FIGURE 12. Center Baffle Attachment

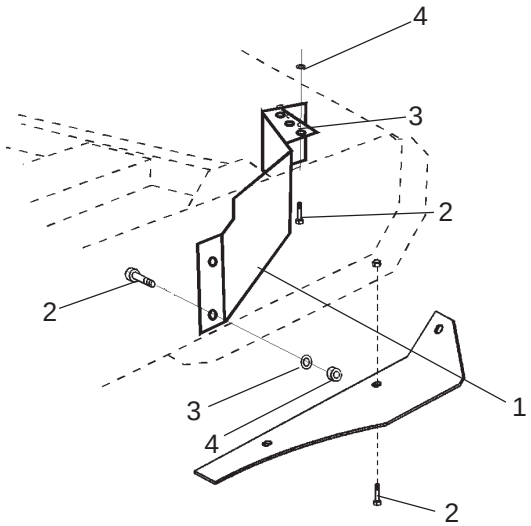

FIGURE 13. Wing Baffle Attachment

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ASSEMBLY

RUBBER DEFLECTORS (STANDARD)

Attach the Center Front Deflector Brackets to the Center Section withthe bolts (1) and locknuts (2). Fasten the Center Section Front Rubber Deflectors **(FIGURE 14)** To these brackets with bolts (3) locknuts (2) and retaining bars (4).

Attach the Front Wing Deflectos to the wing sections with the bolts (5) locknuts (2), and retaining bars (4).

Fasten the Rear Rubber Deflectors **(FIGURE 15 & 16)** the Center Section and Wing Sections with bolts (1) locknuts (2) and retaining bars (3). Note that the Center Rear Deflector is attached to the **inside of the** Center Section, see the detail in **FIGURE 16.**

FIGURE 13. Front Rubber Deflector Attachment.

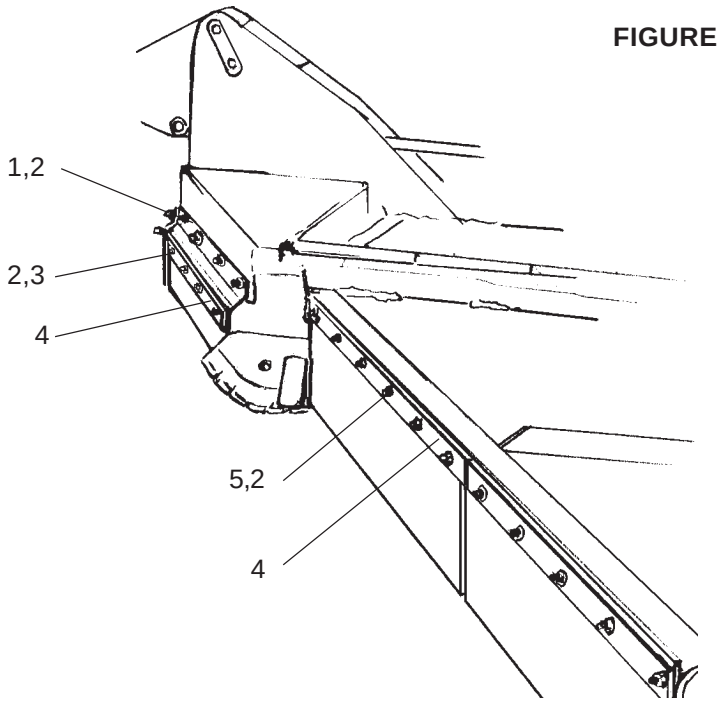
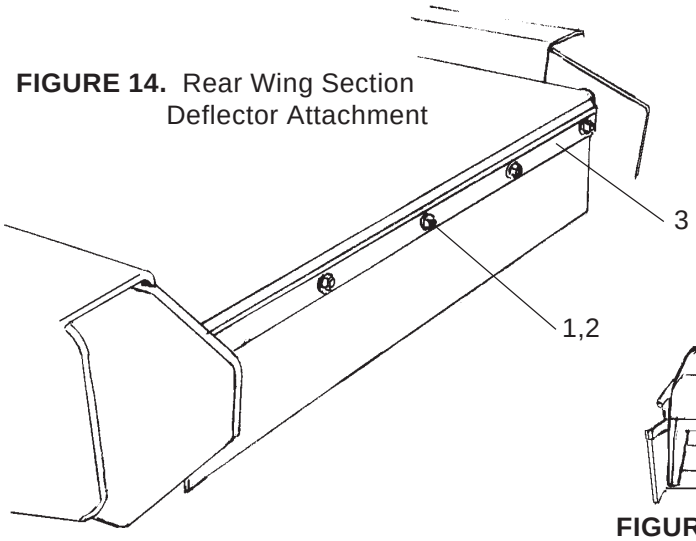


FIGURE 14. Rear Wing Section Deflector Attachment



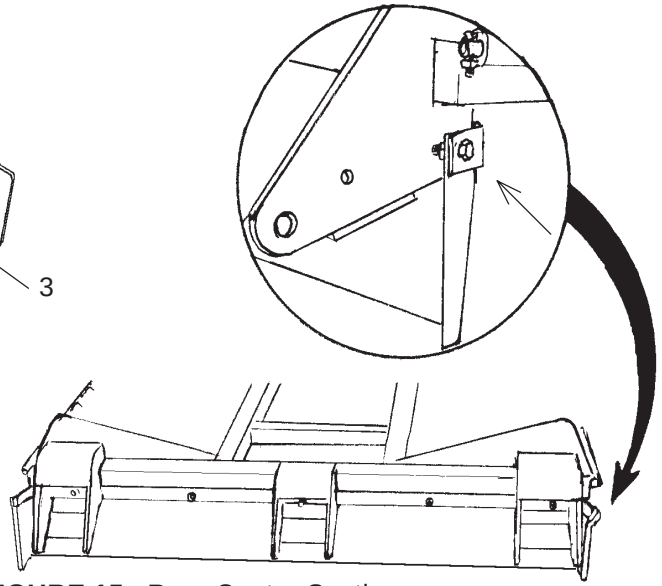


FIGURE 15. Rear Center Section Deflector attachment

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CHAIN GUARD ATTACHMENT

The placement of the Chain Guards corresponds to the Rubber Deflector Attachment with the exception of the Front Center Section see **FIGURE 16**. Attach all Chain Guards with bolts and locknuts specified in the parts list.

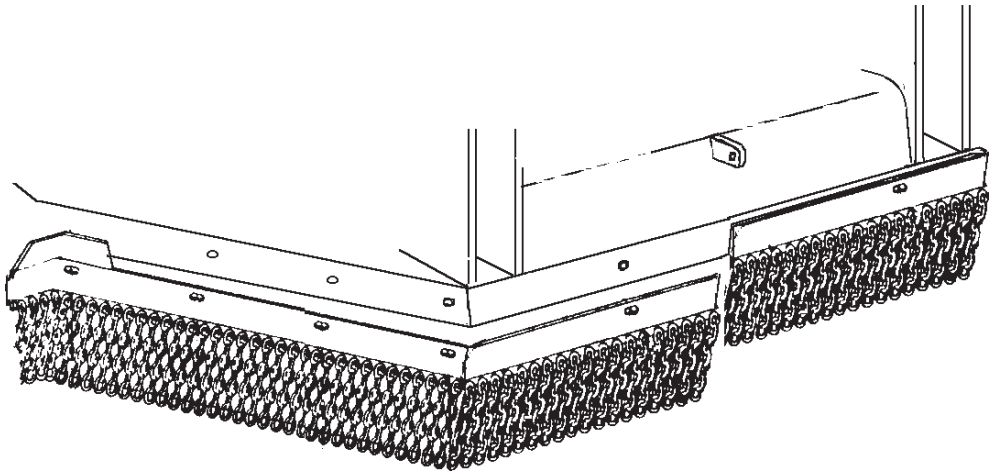


FIGURE 16. Front Chainguard attachment

COUNTERWEIGHT ATTACHMENT (OPTION - Two Section Cutter)

For the two section cutter the Counterweight Attachment (1) must be installed to the left side of the Center Section with the Hinge Pin and Retaining Pin (Follow the Wing Attachment in this section). Fill the Counterweight completely **FULL** of Concrete **FIGURE 17**. Attach the Skid Shoe (2) to the Counterweight with the Bolt (4), Nut (5) and Washer (6). Attach the Chainguard (3) to the Counterweight with Flatwasher (6), Lockwasher (7) and Nut (8). **FIGURE 18**

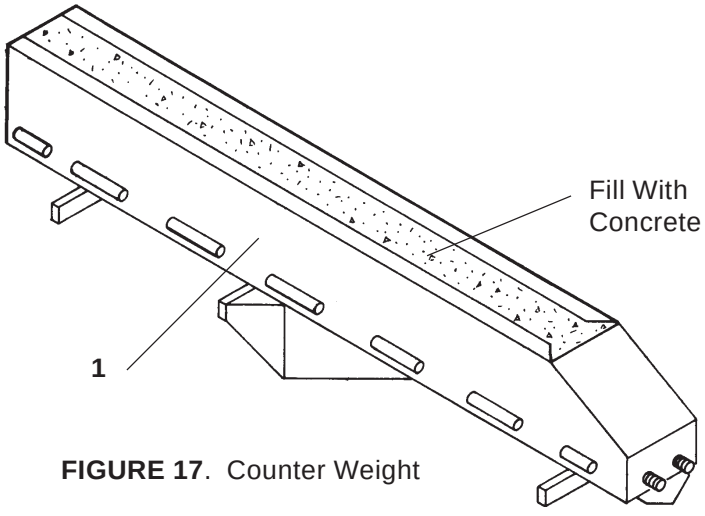
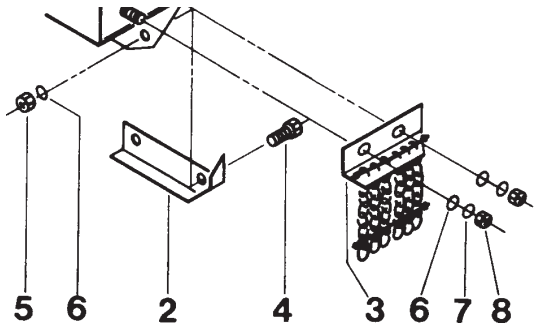


FIGURE 17. Counter Weight

FIGURE 18. Counterweight Chainguard Attachment



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ASSEMBLY

DRIVELINE ATTACHMENT

Remove Wing Nuts holding Divider Gearbox Shield and raise Shield. Remove any tape from Gearbox shafts. Attach the Clamp Yoke end of the Wing Driveline to the Divider Gearbox. Tighten bolts evenly to their proper torque. **FIGURE 19.** Attach the Torque Limiter to the Wing Section Gearboxes by sliding the Limiter to the splined shaft on the Gearbox and tighten the set screw. Attach the Flange Yoke of the Wing Driveline to the Torque Limiter with the bolts provided. Move yoke/limiter group back and forth to make sure it is locked in place. **FIGURE 20.** Install the Main Driveline (CV) with slide collar to the Divider Gearbox by sliding the collar back while attaching the yoke to the splined shaft on the Divider gearbox. Check to make sure it is locked in place.

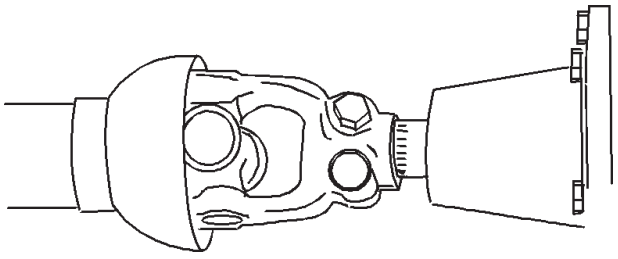


FIGURE 19

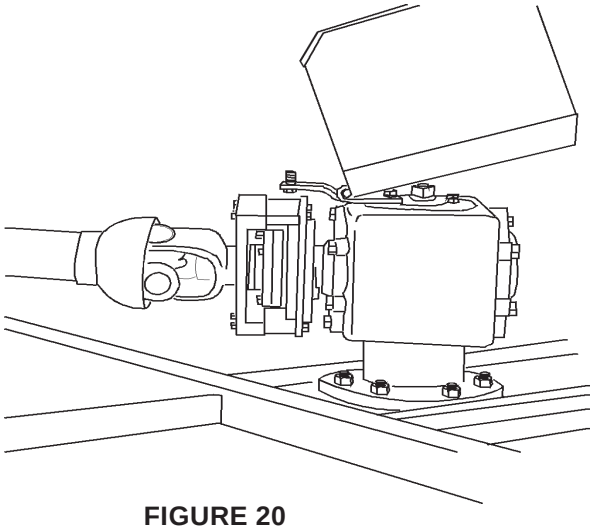
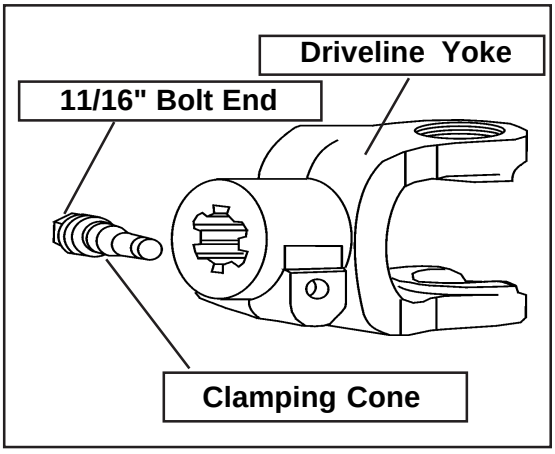


FIGURE 20

DRIVELINE CLAMP CONE YOKE OPERATING INSTRUCTIONS

Loosen the yoke clamp cone with a 11/16” (17mm) wrench and remove the cone from yoke. Slide yoke onto the shaft and align hole for clamping cone with annular groove of gearbox shaft. Reinstall cone and tighten (75 lb-ft torque). Push and pull the driveline to ensure it is securely attached to the shaft. Regularly check the driveline yoke to ensure a tight connection. To remove the yoke, remove the connecting cone and pull yoke off the shaft. If the cone cannot be easily removed by hand, drive it out from the other side using a hammer and punch.

NOTE: The clamping cone is serviced only as a complete assembly. Do not attempt to disassemble the clamping cone.



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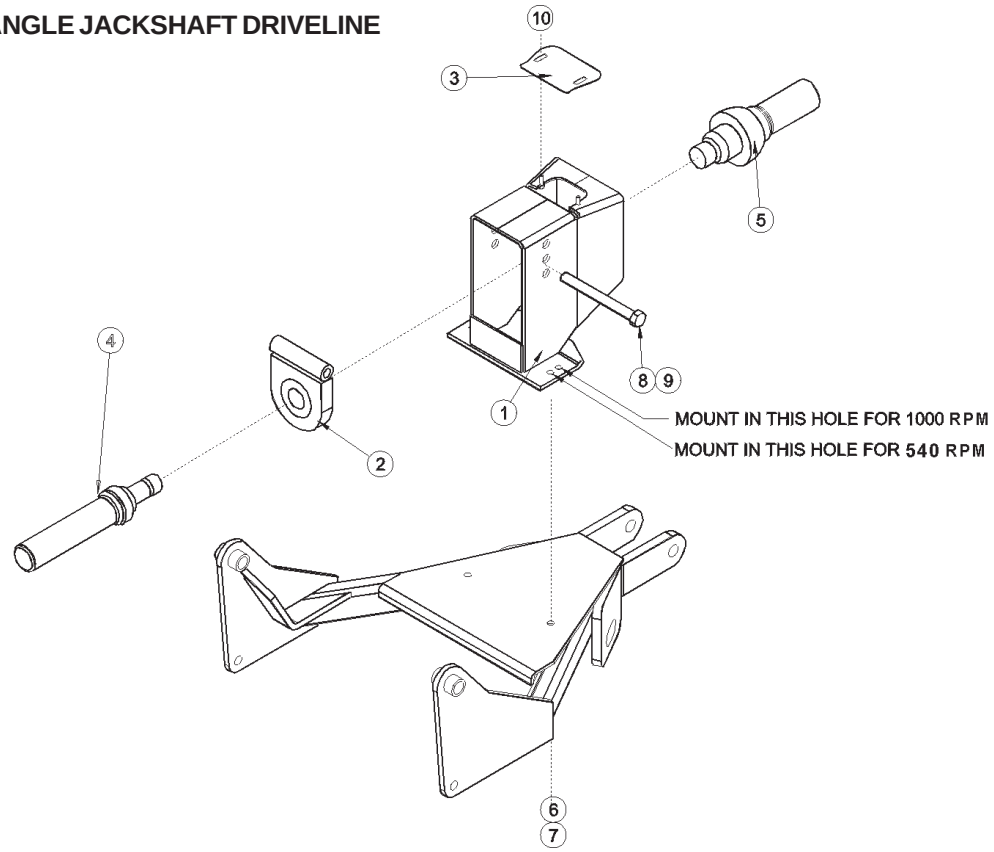
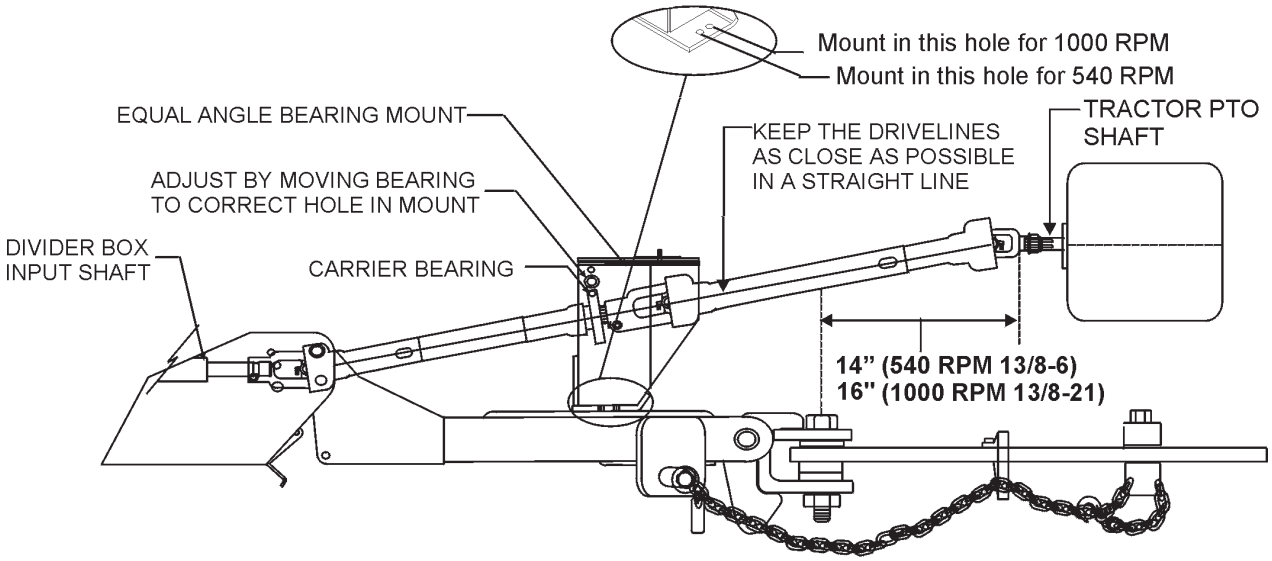
EQUAL ANGLE JACKSHAFT DRIVELINE



Attach bearingsupport weldment (ref #1) to torque weldment as shown. Install jackshaft bearing (ref #2) onto jackshaft stub end.

EQUAL ANGLE DRIVELINE ADJUSTMENT


Mount in this hole for 1000 RPM
Mount in this hole for 540 RPM
EQUAL ANGLE BEARING MOUNT
TRACTOR PTO SHAFT
KEEP THE DRIVELINES AS CLOSE AS POSSIBLE IN A STRAIGHT LINE
ADJUST BY MOVING BEARING TO CORRECT HOLE IN MOUNT
DIVIDER BOX INPUT SHAFT
CARRIER BEARING
14" (540 RPM 13/8-6)
16" (1000 RPM 13/8-21)

NOTE: All yokes must be aligned as shown for proper phasing.

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CANOPY SHIELDS

After final adjustment attach Canopy Shields over Divider Gearbox **(FIGURE 26)** , Secondary Gearbox **(FIGURE 24 & 25)**.

CAUTION

Install all Canopy Shields over Torque Limiters and Drivelines and make certain they remain installed at all times when operating this Cutter.

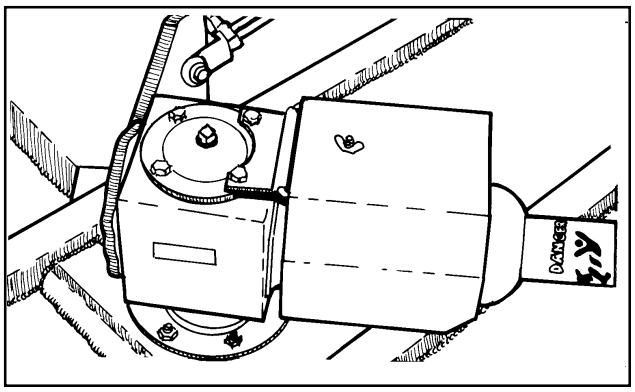

FIGURE 24

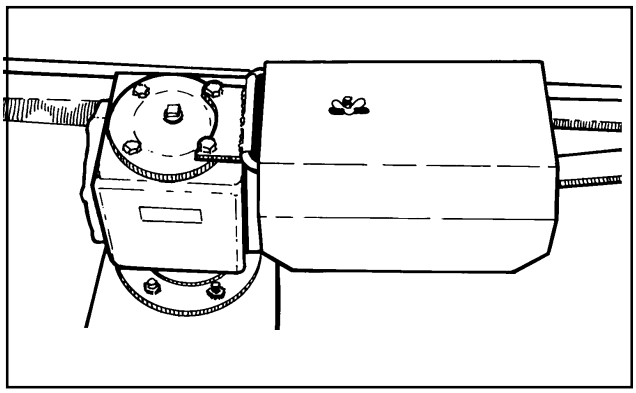

FIGURE 25

FIGURE 26

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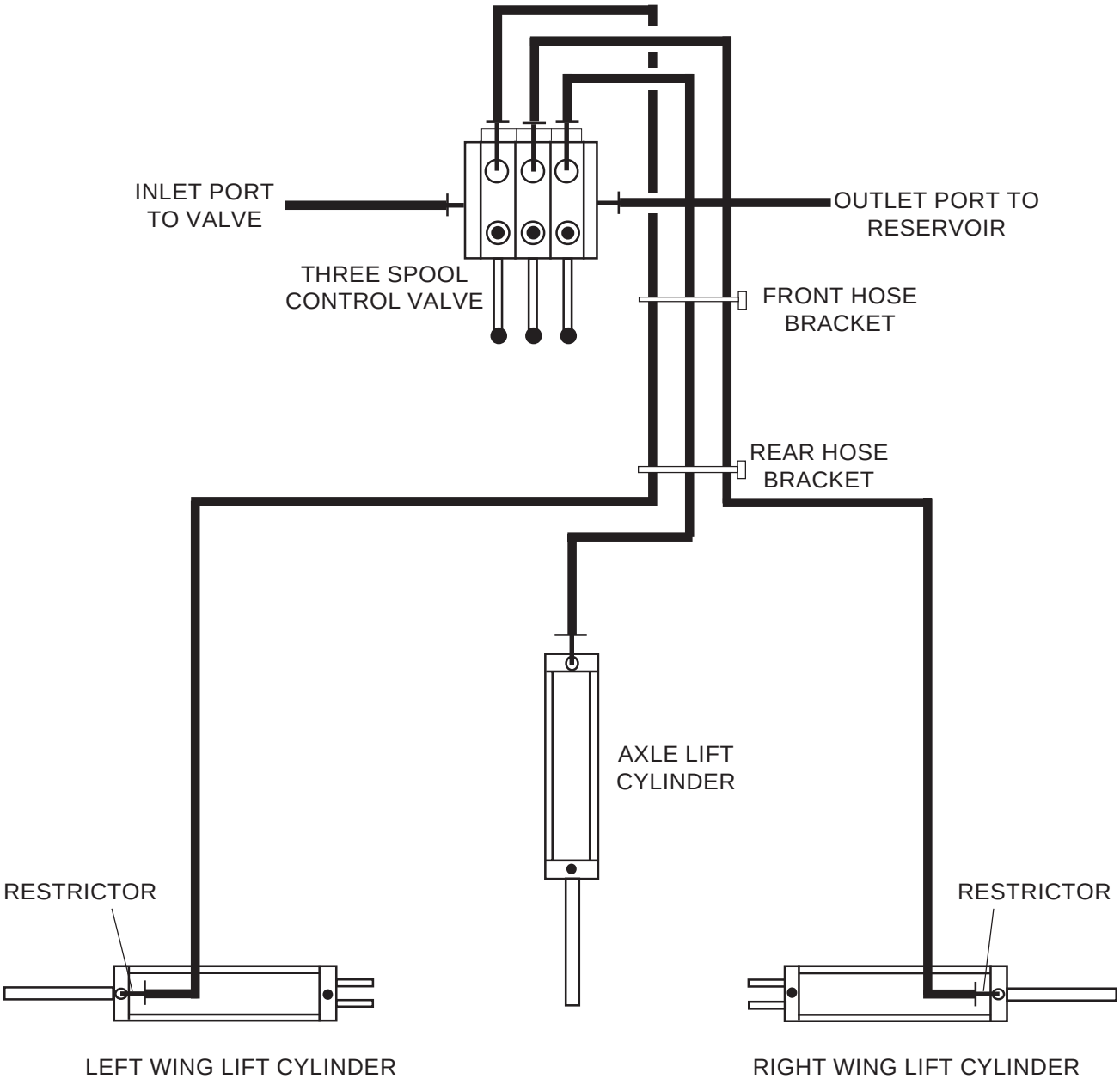
THREE SPOOL CONTROL VALVE INSTALLATION

A Three-Spool Control Valve is available from your dealer for use with tractors having either an open or closed center Hydraulic System. If a 3 spool valve bank is required assemble on bracket and install on tractor fender at desired location. A Valve Mounting Kit is available as extra equipment which includes fender bracket, fittings, hoses, and shield required to mount valve. Refer to Parts List Section 6-36. Install Restrictors in Gland Ports in Wing Cylinders. To install the hydraulics from the Cutter to the Control Valve, connect the Center Axle Lift Cylinder Hose to the Right Port on the Hydraulic Valve. Connect the Right Wing Folding Cylinder Hose to the Center Port of the Hydraulic Valve. Connect the Left Wing Folding Cylinder Hose to the Left Port of the Hydraulic Valve. Route each hose through front and rear hose brackets. Remove plastic plug from Breather of Cylinder before operation.



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OPERATION SECTION

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RHINO FL14/FL20 ROTARY MOWER OPERATION INSTRUCTIONS

Rhino FL14/FL20 rotary mowers are manufactured with quality material by skilled workers. These mowers are designed to cut grass, weeds, crop stalks, brush and other vegetation up to 3-1/2" diameter. The mower is equipped with protective deflectors and/or chain guards to prevent objects being thrown from the mower by the blades, however, no shielding is 100% effective. All shields, guards, deflectors, and chains equipped on the unit must be maintained on the mower in good operational condition.

It is the operator's responsibility to be knowledgeable of all potential operating hazards and to take every reasonable precaution to ensure oneself, others, animals, and property are not injured or damaged by the mower, tractor, or a thrown object. Do not operate the mower if passersby, pets, livestock, or property are within 300 feet of the unit.

This section of the Operator's Manual is designed to familiarize, instruct, and educate safe and proper mower use to the operator. Pictures contained in this section are intended to be used as a visual aid to assist in explaining the operation of a flex-wing rotary mower and are not necessarily of a FL14/FL20 cutter. Some pictures may show shields removed for picture clarity. NEVER OPERATE this implement without all shields in place and in good operational condition. The operator must be familiar with the mower and tractor operation and all associated safety practices before operating the mower and tractor. Proper operation of the mower, as detailed in this manual, will help ensure years of safe and satisfactory use of the mower.

IMPORTANT: To avoid mower damage, retorque all bolts after the first 10 hours of operation. Retighten blade carrier retaining nut on gearbox lower shafts to 400 ft.bs..

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READ AND UNDERSTAND THE ENTIRE OPERATING INSTRUCTIONS AND SAFETY SECTION OF THIS MANUAL AND THE TRACTOR MANUAL BEFORE ATTEMPTING TO USE THE TRACTOR AND MOWER. If you do not understand any of the instructions, contact your nearest authorized dealer for a full explanation. Pay close attention to all safety signs and safety messages contained in this manual and those affixed to the cutter and tractor.

DANGER!

READ, UNDERSTAND, and FOLLOW the following Safety Messages. Serious injury or death may occur unless care is taken to follow the warnings and instructions stated in the Safety Messages. Always use good common sense to avoid hazards. (SG-2)

PELIGRO!

Si no lee Ingles, pida ayuda a alguien que si lo lea para que le traduzca las medias de seguridad. (SG-3)

!LEA EL INSTRUCTIVO!

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Standard Equipment and Specifications

	FL20	FL14
Horsepower Required (Min.)	75 HP	75 HP
Cutting Capacity (Diameter)	2-1/2”	2-1/2”
Cutting Height	3/4”-12”	3/4”-12”
Safety Deflectors*	Standard	Standard
Cutting Width	240”	162”
Transport Width	105”	106”
Overall Width	248”	170”
Overall Length	203”	203”
Blade Overlap	6”	6”
Weight (Approximate)	6465 lbs.	6361 lbs.
Wing Lift	Hydraulic	Hydraulic
Wing Flex (Degrees)	90° Up-22° Down	90° Up-22° Down
Jack Stand	Standard	Standard
Hitch	Clevis	Clevis
Blade Carrier	Pan or Bar	Pan or Bar
Gearbox Rating:**		
Power Divider	200 HP	200 HP
Center & Wings	150 HP	150 HP
Output Shaft Diameter	2”	2”
Blade Tip Speed		
540 RPM	16,328 FPM	16,328 FPM
1000 RPM	15,994 FPM	15,994 FPM
Driveline Size:		
Main	Cat 5	Cat 5
Wings	Cat 5 or Cat 6 (1000 RPM)	Cat 5 or Cat 6 (1000 RPM)
Deck Thickness	10 Gauge	10 Gauge
Side Skirts	1/4”x10-1/2”	1/4”x10-1/2”
Replaceable Skid Shoes	Standard	Standard

*Safety Deflectors are standard equipment. Single and double chain guards are available as extra equipment at extra cost. Servis-Rhino recommends mowers be equipped with deflectors or double chain guards for all mowing purposes. Single chain guards may be used for agriculture purposes only and are specifically not recommended for highway, right-of-way, parks or greenbelt mowing.

**Ratings based on actual field performance.

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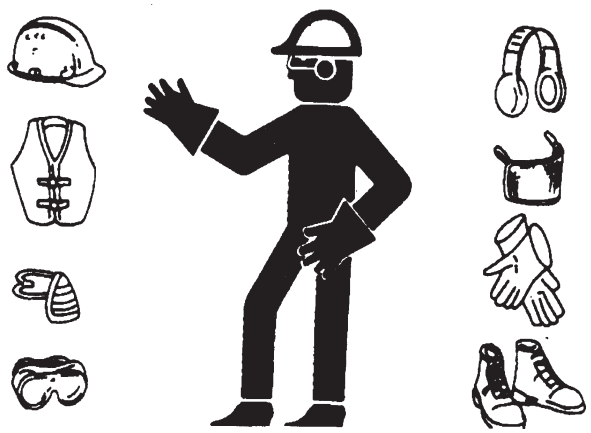
1. OPERATOR REQUIREMENTS

Safe operation of the rotary mower is the responsibility of a qualified operator. A qualified operator has read and understands both the mower and tractor Operator Manuals and is experienced in tractor and mower operations and all associated safety practices. In addition to the safety messages contained in this manual, safety message decals are affixed to the mower and tractor. If any part of the operation and safe use of the mower and tractor is not completely understood, consult an authorized dealer for a full explanation.

Safe mower operation requires that the operator wear approved Personal Protective Equipment (PPE) for the job conditions while connecting, operating, servicing and repairing the mower and tractor. PPE is designed to provide operator protection from bodily injury and includes the following:

Personal Protective Equipment (PPE)

- Protective eye glasses, goggles, or face shield
- Hard hat
- Steel toed safety footwear
- Gloves
- Hearing protection
- Close fitting clothing
- Respirator or filter mask



DANGER!

NEVER use drugs or alcohol immediately before or while operating the Tractor and Implement. Drugs and alcohol will affect an operator's alertness and coordination and therefore affect the operator's ability to operate the Equipment safely. Before operating the Tractor or Implement, an operator on prescription or over-the-counter medication must consult a medical professional regarding any side effects of the medication that would hinder their ability to operate the Equipment safely. NEVER knowingly allow anyone to operate this Equipment when their alertness or coordination is impaired. Serious injury or death to the operator or others could result if the operator is under the influence of drugs or alcohol. (SG-27)

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2. TRACTOR REQUIREMENTS

The tractor used to operate the mower must have the power capacity to lift, pull, and operate the Power Take Off (PTO) at the mower's rated speed while traveling at a ground speed between 2 and 5 MPH. Operating the mower with a tractor that does not meet the following requirements may cause tractor or mower damage and be a potential danger to the operator and passersby.

Tractor Requirements and Capabilities

- ASAE approved Roll-Over Protective Structure (ROPS) or ROPS cab and seat belt.
- Tractor Safety Devices..... Slow Moving Vehicle (SMV) emblem, lighting, PTO master shield
- Tractor Horsepower -Minimum ..... 75 HP
  -Maximum……..... 540 RPM Unit - 120 HP; 1000 RPM Unit 140 HP
- Drawbar..... 14" length for 540 RPM unit; 16" length for 1000 RPM unit, if mower is equipped with Pintle Hook (Optional Equipment) drawbar length must be modified (see 2.4 Drawbar), rated to carry weight of mower, safety chain attachment point
- Hydraulics..... Minimum of 1 hydraulic port (extra 3-spool valve required). Minimum 2 ports, 3 ports recommended if additional 3-spool control valve is not used.
- Front End Weights..…….....As needed to maintain 20% weight on front axle
- Power Take Off.....…….....Operating speed and shaft size depends on operating speed and driveline type of the mower.

2.1 ROPS and Seat Belt

A Roll-Over-Protective-Structure (ROPS) and seat belt are essential to protect the operator from falling off the tractor, especially during a roll over where the driver could be crushed and killed. The ROPS and seat belt must be used in conjunction with one another. Only operate the tractor with the ROPS in the raised position and seat belt fastened. Tractor models not equipped with a ROPS and seat belt should have these life saving features installed by an authorized tractor dealer.

WARNING!

Operate this Equipment only with a Tractor equipped with an approved roll-over-protective system (ROPS). Always wear seat belts. Serious injury or even death could result from falling off the Tractor--particularly during a turnover when the operator could be pinned under the ROPS. (SG-7)

2.2 Tractor Safety Devices

If transporting or operating the tractor and mower near a public roadway, the tractor must be equipped with proper warning lighting and a Slow Moving Vehicle (SMV) emblem which are clearly visible from the rear of the unit. Lights and a SMV emblem must be equipped directly on implements if the visibility of the tractor warning signals are obscured.

Maintain all manufacturer equipped safety shields and guards. Always replace shields and guards that were removed for access to connect, service, or repair the tractor or mower. Never operate the tractor PTO with the PTO master shield missing or in the raised position.

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2.3 Tractor Horsepower

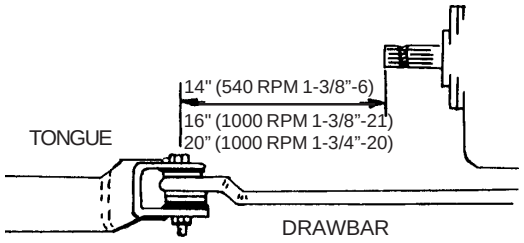
The horsepower required to operate the mower depends on several operating factors including the vegetation to be cut, terrain condition, operator experience, condition of the mower and tractor, and others. For most mowing conditions, the FL14 and FL20 mower requires a tractor with a minimum of 75 HP. Operating the mower with a tractor that does not have adequate power may damage the tractor engine. Exceeding 120 HP for a 540 RPM drive and 140 HP for a 1000 RPM drive may cause mower damage by overpowering the unit in heavy cutting conditions.

2.4 Drawbar

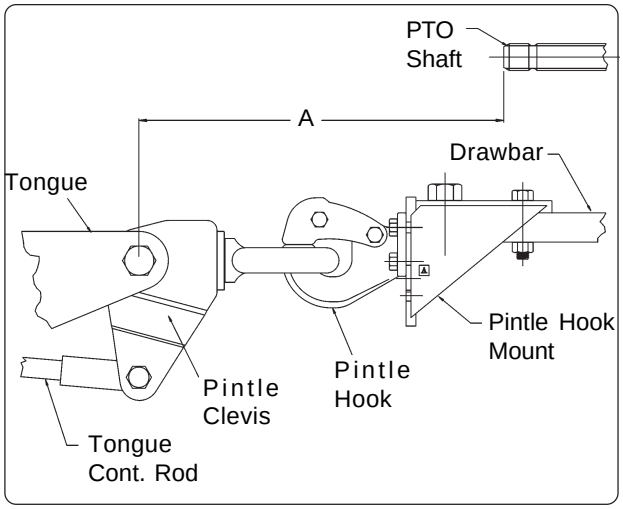
The tractor drawbar must be positioned at a certain length based on the operating speed of the mower for proper driveline operation. If the mower is a 540 RPM unit, position the drawbar length from shaft end to hitch hole at 14". For 1000 RPM mowers, set the drawbar length at 16" for 21 spline 1-3/8" mowers and at 20" for 1-3/4" 20 spline mowers.

Ensure that the drawbar is rated to carry the tongue weight of the mower.

Tractor Drawbar Length
(Based on Mower Operating Speed)



Pintle Hook Hitch-Optional Equipment
Drawbar length must be modified to obtain dimension "A" (CV Driveline = 17" ± 2").



2.5 Tractor Hydraulics

The mower center section and each wing are positioned with hydraulic cylinders that are operated by the tractor hydraulic pump. The tractor must have a minimum of 2 hydraulic control valves devoted to the mower unless the tractor is fitted with a 3-spool control valve (extra equipment).

A 3-spool control valve is required if the tractor is equipped with a single valve and is recommended for those with two valves so that the center section and each wing can be controlled independent of one another. Refer to the Assembly Section of this manual for properly equipping the tractor with a 3-spool control valve. Tractors equipped with three hydraulic ports can position the center section and each wing independently with no extra equipment. If the tractor is equipped with only two hydraulic ports and a 3-spool control valve is not used, the wings cannot be operated independently and will raise and lower at different speeds.

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2.6 Front End Weight

A minimum of 20% total tractor weight must be maintained on the tractor front end at all times. Front end weight is critical to maintain steering control and to prevent the tractor from rearing up while driving. If the front end is too light, add weight until a minimum of 20% total weight is reached on the front tires. Front weights and weight carriers can be purchased through an authorized tractor dealership.

2.7 Power Take Off (PTO)

Depending on the unit, the mower is designed to operate at a PTO speed of 540 or 1000 RPM. Most tractors operate at either 540, or a combination of 540 and 1000 RPM PTO speeds. The operating speed of the mower and tractor can be determined by the number of splines on the driveline yoke and PTO output shaft. Those operating at 540 RPM will have a 1-3/8" diameter 6-spline shaft and those operating at 1000 RPM will have a 1-3/8" 21-spline shaft or a 1-3/4" 20 spline shaft. Refer to the tractor owner's manual for instructions to change PTO speeds on models that operate at more than one speed.

If operating an older model tractor where the tractor's transmission and PTO utilize one master clutch, an over-running clutch must be used between the PTO output shaft and the driveline of the mower. An authorized tractor dealer can provide the over-running clutch and its installation if needed.

WARNING!

DO NOT use a PTO adapter to attach a non-matching Implement driveline to a Tractor PTO. Use of an adapter can double the operating speed of the Mower resulting in excessive vibration, thrown objects, and blade and mower failure. Adapter use will also change the working length of the driveline exposing unshielded driveline areas. Serious bodily injury and/or equipment failure can result from using a PTO adapter. Consult an authorized dealer for assistance if the Implement driveline does not match the Tractor PTO. (S3PT-14)

WARNING!

Never operate the Tractor and Mower if the Mower main driveline is directly connected to the Tractor transmission. Tractor braking distances can be substantially increased by the momentum of the rotating Mower blades driving the Tractor transmission even though the Tractor clutch has been engaged. Install an over running clutch between the Tractor PTO and the Mower driveline to prevent this potentially dangerous situation.

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3. GETTING ON AND OFF THE TRACTOR

Before getting onto the tractor, the operator must read and completely understand the mower and tractor operator manuals. If any part of either manual is not completely understood, consult an authorized dealer for a complete explanation.

WARNING!

Do not mount the Tractor while the tractor is moving. Mount the Tractor only when the Tractor and all moving parts are completely stopped. (SG-12)

3.1 Boarding the Tractor

Use both hands and equipped handrails and steps for support when getting on the tractor. Never use tractor control levers for support when mounting the tractor. Always seat yourself in the operator's seat and fasten the seatbelt. Only operate the tractor and mower with the ROPS in the raised position.

Never allow passengers to ride on the tractor or mower. Riders can easily fall off and be seriously injured or killed from being ran over by both the tractor and mower. It is the operator's responsibility to forbid riders.

DANGER!

Never allow children or other persons to ride on the Tractor or Implement. Falling off can result in serious injury or death. (SG-10)

DANGER!

Never allow children to operate or ride on the Tractor or Implement. (SG-11)

3.2 Dismounting the Tractor

Before dismounting, park the tractor and mower on a reasonably level surface, apply the parking brake, idle the engine down, disengage the PTO, and lower the mower to the ground. Shut down the tractor engine according to the operator's manual, remove the key, and wait for all motion to completely stop. Never leave the seat until the tractor, its engine and all moving mower parts are completely stopped.

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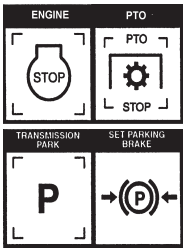
DANGER!

BEFORE leaving the Tractor seat, always engage the brake and/or set the Tractor transmission in parking gear, disengage the PTO, stop the engine, remove the key, and wait for all moving parts to stop. Place the Tractor shift lever into a low range or parking gear to prevent the Tractor from rolling. Never dismount a Tractor while it is moving or while the engine is running. Operate the Tractor controls from the Tractor seat only. (SG-9)



Use hand rails and steps when exiting the tractor. Be careful of your step and use extra caution when mud, ice, snow or other matter has accumulated on the steps or hand rails. Use all handrails and steps for support and never rush or jump off the tractor.

4. STARTING THE TRACTOR

The operator must have a complete understanding of the placement, function, and operational use of all tractor controls before starting the tractor. Review the tractor operator's manual and consult an authorized dealer for tractor operation instructions if needed.

Essential Tractor Controls:
- Locate the light control lever
- Locate the engine shut off control
- Locate the brake pedals and the clutch
- Locate the PTO control
- Locate the 3 point hitch control lever
- Locate the hydraulic remote control levers

Before starting the tractor ensure the following:
- Conduct all pre-start operation inspection and service according to the tractor operator's manual.
- Make sure all guards, shields, and other safety devices are securely in place.
- The parking brake is on.
- The PTO control lever is disengaged.
- The 3-point hitch control lever is in the lowered position.
- The hydraulic remote control levers are in the neutral position.
- The tractor transmission levers are in park or neutral.

Refer to the tractor owner's manual for tractor starting procedures. Only start the tractor while seated and belted in the tractor operator's seat. Never bypass the ignition switch by short circuiting the starter solenoid.

After the tractor engine is running, avoid accidental contact with the tractor transmission to prevent sudden and unexpected tractor movement.

DANGER!

Never run the Tractor engine in a closed building or without adequate ventilation. The exhaust fumes can be hazardous to your health. (SG-23)

DANGER!

Start the Tractor only when properly seated in the Tractor seat. Starting a Tractor in gear can result in injury or death. Read the Tractor operator's manual for proper starting instructions. (SG-13)

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5. CONNECTING THE MOWER TO THE TRACTOR

Use extreme caution when connecting the mower to the tractor. The mower should be securely resting at ground level or on blocks. Place a block in front of and behind the center section wheels to prevent the mower from moving. Keep hands and feet out from under the mower and clear of pinch points between the tractor and mower.

DANGER!

Always shut the Tractor completely down, place the transmission in park, and set the parking brake before you or anyone else attempts to connect or disconnect the Implement and Tractor hitches. (S3PT-15)

5.1 Connecting the Mower Tongue to the Tractor

1. Ensure the tractor is equipped with the correct PTO shaft and the drawbar is set at the correct length.

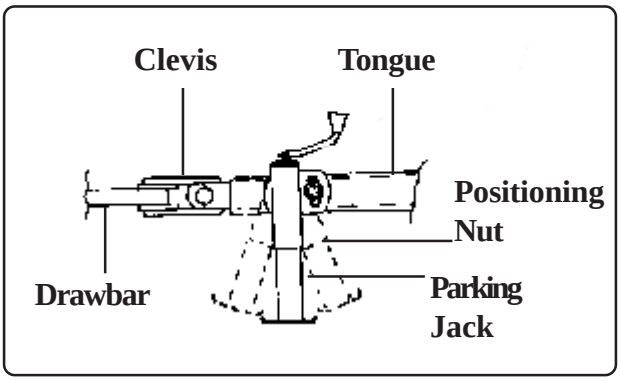
2. Using the parking jack, position the tongue clevis to the height of the tractor drawbar. Adjust the mower tongue to be level and parallel with the tractor drawbar using the control rod connecting the mower tongue to the deck.

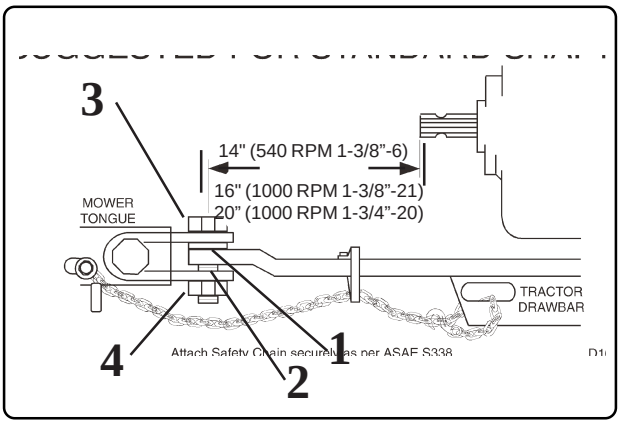
3. Board the tractor and start the engine. Back the tractor to the mower aligning the drawbar hitch hole with the mower tongue clevis. Turn off the tractor engine, place the tractor in park, and set the parking brake before dismounting.

4. To attach the mower, place two 1" flatwashers (1) positioned under top lip of tongue clevis and to the top of drawbar. Add additional 1" flatwashers (2) between the bottom of drawbar and bottom lip of clevis to fill open space. Insert a 1" diameter grade 5 or 8 bolt (3) through clevis and drawbar and retain in position with a 1" locknut (4). Tighten the locknut securely but do overtighten which could spring or break the clevis. NEVER attach mower to the tractor with a pin not having a nut.

5. Securely attach the mower safety chain to the tractor drawbar or drawbar support frame.

6. Lower the jack until the tongue is completely supported by the drawbar. Remove jack from the tongue and place on storage bracket of mower.





Safety Tow Chain

If the mower is towed on a public roadway, a safety chain with tensile strength equal to or greater than the gross weight of the mower must be connected between the tractor and mower. This will help control the implement in the event the tongue becomes disconnected from the drawbar. After connecting both ends of the safety chain, drive the tractor to the right and left to check for proper chain length. Adjust length as necessary and allow only enough slack in the chain to make a maximum turn in both directions.

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5.2 Connecting Mower Hydraulic Lines to the Tractor

With the tractor shut down and secured in position, relieve hydraulic pressure from the tractor by moving the control levers back and forth several times or placing the levers in the float position.

When connecting the mower hydraulic lines, keep hoses, quick couplers, and swivels free of contamination. Never leave a disconnected hose end open and cap the tractor hydraulic outlet ports when not in use. If the tractor ports or mower hydraulic hose ends become contaminated, wipe clean with a rag before connecting.

Operating Mower Hydraulics with Three Tractor Hydraulic Ports

Connect one hose into each hydraulic port. Connect lines to correspond with position of hydraulic control levers.

Operating Mower Hydraulics with Two Tractor Hydraulic Ports

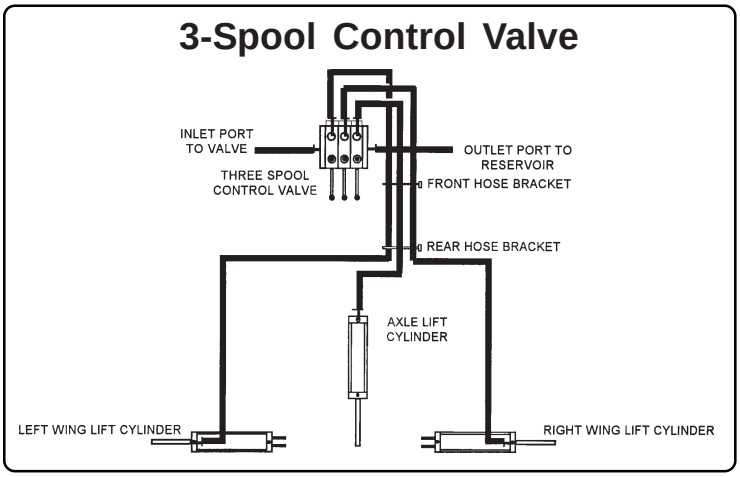
The lines that operate the wings must be plumbed together and will be controlled using one hydraulic control valve and the center section with the remaining control valve. Ensure that the operator is aware that each wing cannot be controlled independently nor will they raise and lower simultaneously.

Operating the Mower Hydraulics with a 3-Spool Hydraulic Control Valve (Extra Equipment)

Ensure the valve matches the hydraulic operating system of the tractor (open or closed center). Refer to the Assembly Section for additional information on equipping the tractor with a 3-spool control valve.

Mount the valve bank to a tractor fender or other accessible location. Connect valve bank inlet and outlet lines to outlets of the same tractor hydraulic port. Connect the mower hydraulics to the control valve bank with the center section line to the right port. Connect the wing cylinder lines to the control valve positioned to correspond with the left and right wing.

To activate the 3-spool hydraulic control valve, tie the tractor's hydraulic control lever back to keep hydraulic oil continuously fed to the valve bank.



Hydraulic Line Support

After connecting the mower hydraulic lines to the tractor, support the hoses with the equipped brackets. Ensure that hoses do not contact the driveline, do not bind while turning, and do not become pinched or kinked.

Hydraulic Cylinder Priming

Hydraulic Cylinders must be filled with hydraulic oil before removing the wing transport braces to lower the mower wings. Hydraulic cylinders and lines are filled by holding the valve control levers in the raised position until the cylinders fully retract (wing cylinders) and extend (center cylinder). Place control levers in the float position and repeat process a second time. Ensure wings are entirely supported by the cylinders before removing the transport braces. NEVER drive out bar pins and NEVER remove braces that have tension on them.

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6. SETTING THE MOWER

Properly setting the cutting height is essential for efficient and safe operation. A properly set mower will make a more uniform cut, distribute clippings more evenly, require minimal tractor work, and follow the contour of uneven terrain. Note: Avoid very low cutting heights, striking the ground with the blades gives the most damaging shock loads and will cause damage to the mower and drive. Blades contacting the ground may cause objects to be thrown out from under the mower deck. Always avoid operating the mower at a height which causes the blades to contact the ground.

DANGER!

Never work under the Implement, the framework, or any lifted component unless the Implement is securely supported or blocked up to prevent sudden or inadvertent falling which could cause serious injury or even death. (SG-14)

6.1 SETTING DECK HEIGHT

LEVELING DECK CENTER SECTION

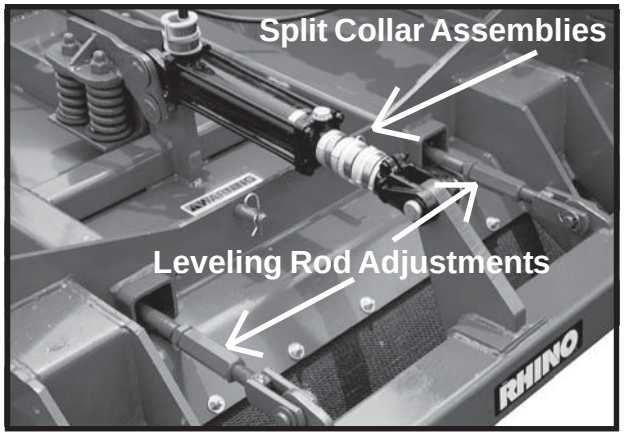
1. Place the tractor and mower on a level surface and lower both wings.

2. Using the center section hydraulic cylinder, position the mower so the skid shoes are 1" less off the ground than the desired final cut height. For example, for a 3" cut raise or lower the mower until the skid shoes are approximately 2" off the ground..

3. Shut down the tractor, place the transmission in park, and set the parking brake before dismounting.

4. Level the mower deck front to rear by adjusting the leveling rods linking the tongue to the rear axle. DO NOT allow feet or other body part underneath the mower when making adjustments. To adjust rod length, loosen jamnut and screw turnbuckles. To lower the front, lengthen the rods and to raise the front, shorten the rods. DO NOT unscrew turnbuckles to the point that either rod threaded ends becomes disconnected which will cause the mower to fall. Re-tighten jamnuts when deck is leveled.
   IMPORTANT: Alternate adjustments between rods and adjust at equal lengths to maintain equal tension. Improper adjustments may cause rods to snap or bend.

5. Place split collar assemblies on the center axle hydraulic cylinder rod to maintain a set cutting height each time the mower is raised and lowered.



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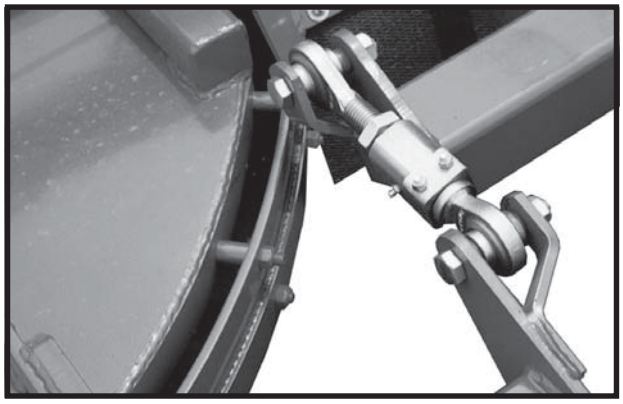
LEVELING WING SECTIONS WITH CENTER

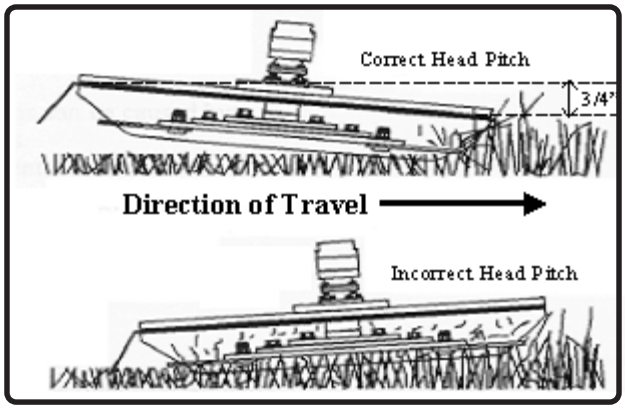
1. To level the wing sections with the deck center, adjust the leveling screw between the wing axle and the center axle. To lower the wing, loosen the jamnut and shorten the screw assembly, lengthen the screw assembly to raise the wing. After wings are leveled, retighten jamnuts to maintain settings.



6.2 Setting Deck Pitch

To facilitate safe and efficient operation, the mower should be operated with the deck approximately 3/4" LOWER IN THE FRONT THAN THE REAR.

Operating the mower at this pitch will allow the mower to cut the grass only once and requires less work from the tractor. In addition, a more even distribution of the clippings from the rear of the mower will be achieved with this deck pitch.



1. Adjust the leveling rods linking the tongue to the rear axle until the front of the mower is at least 3/4" lower in the front that than the rear. To lower the front, lengthen the leveling rods and to raise the front shorten the leveling rods. IMPORTANT: Adjust the leveling rods the same amount and maintain equal tension in the rods. Improper adjustment may cause rods to snap or bend. Retighten the jamnuts after the deck pitch has been set.

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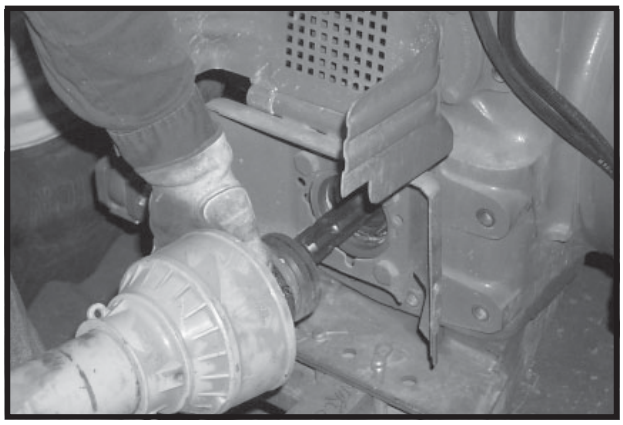
7. DRIVELINE ATTACHMENT

The driveline yoke and tractor PTO shaft must be dirt free and greased for attachment.

To connect the mower driveline to the tractor PTO output shaft, pull the driveline yoke collar back and align the grooves and splines of the yoke with those of the PTO shaft. Push the driveline yoke onto the PTO shaft, release the locking collar, and position the yoke until the locking collar balls are seated onto the PTO shaft. Push and pull the driveline back and forth several times to ensure a secure attachment.



WARNING!

When attaching the PTO yoke to the Tractor PTO shaft, it is important that the spring activated locking collar slides freely and the locking balls are seated securely in the groove of the PTO shaft. A driveline not attached correctly to the Tractor PTO shaft could slip off and result in personal injury and damage to the cutter.

7.1 Driveline Length Check

WARNING!

Before operating the Mower, check to make sure the driveline will not bottom out or become disengaged. Bottoming out occurs when the inner shaft penetrates the outer housing until the assembly becomes solid-it can shorten no more. Bottoming out can cause serious damage to the Tractor PTO by pushing the PTO into the Tractor and through the support bearings or downward onto the PTO shaft, breaking it off.

When fitting the mower to the tractor, the telescoping driveline must be inspected to ensure that at its most compressed position, the profiles do not “bottom out”, and when at its farthest extended position, there is sufficient engagement between the profiles to operate safely. At its shortest length, there must be at least a 1” clearance between each profile end and opposite profile universal joint. At its farthest operating extension, a minimum profile engagement of 12” must be maintained for a Constant Velocity (CV) tube type driveline and a minimum engagement of 6” for non-CV solid shaft drivelines.

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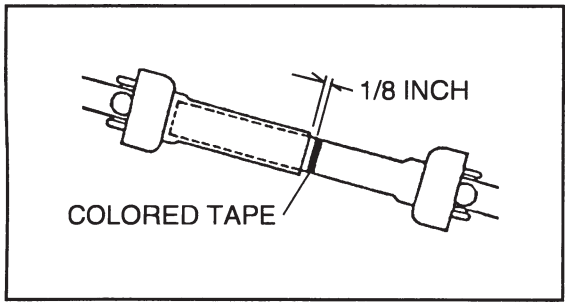
"Bottoming Out" Check Procedure

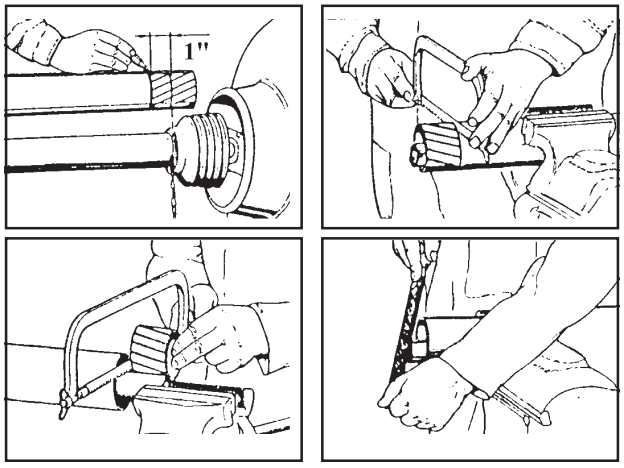
1. Disconnect driveline from the tractor and slide the profiles together until fully compressed.
2. Place a mark on the inner shield 1/8" from the end of the outer shield and reattach the driveline to the PTO shaft.
3. With the ***PTO NOT TURNING***, slowly drive the tractor with mower attached through the sharpest turn possible and watch shaft movement. With the ***PTO NOT TURNING***, slowly drive the tractor with the mower attached through the most severe terrain conditions expected and watch shaft movement.
4. If the distance between the mark and the outer shield becomes less than 2" at any point there is a potential problem bottoming out the driveline and the driveline should be shortened.



Driveline in maximum compressed position.

Shorten the driveline profiles as follows:

1. Remove the driveline from the tractor.
2. Position the mower to the point with the shortest distance between the tractor PTO shaft and cutter gearbox. Shut down the tractor and securely block the mower in this position.
3. Pull driveline apart and reattach yoke to PTO shaft.
4. Hold driveline sections parallel to one another and measure back 1" from yoke of each shaft and place mark on opposite section. Cut this length off with a saw.
5. Round off all sharp edges and debur.
6. Thoroughly grease then reinstall the driveline.
7. Recheck for proper operation.



Engagement Check Procedure

1. With the driveline attached, position the mower to the point where the telescoping driveline is at its maximum extension. Completely shut down the tractor and secure in position.
2. Mark the inner driveline shield 1/8" from the end of the outer shield.
3. Disconnect the driveline from the tractor and separate the two driveline halves.
4. Measure the distance from the mark to the end of the inner profile. This length is the amount the driveline profiles were engaged.
5. If the engaged length is less than 12" for a CV driveline and less than 6" for a non-CV driveline, the shaft is considered too short and should be replaced with a longer shaft. Consult an authorized dealer to purchase the required driveline length.

NOTE: If the driveline cannot be shortened and still maintain the required profile engagement, the operator must be made aware of terrain conditions and avoid situations which pose a potential problem to avoid damaging the driveline.

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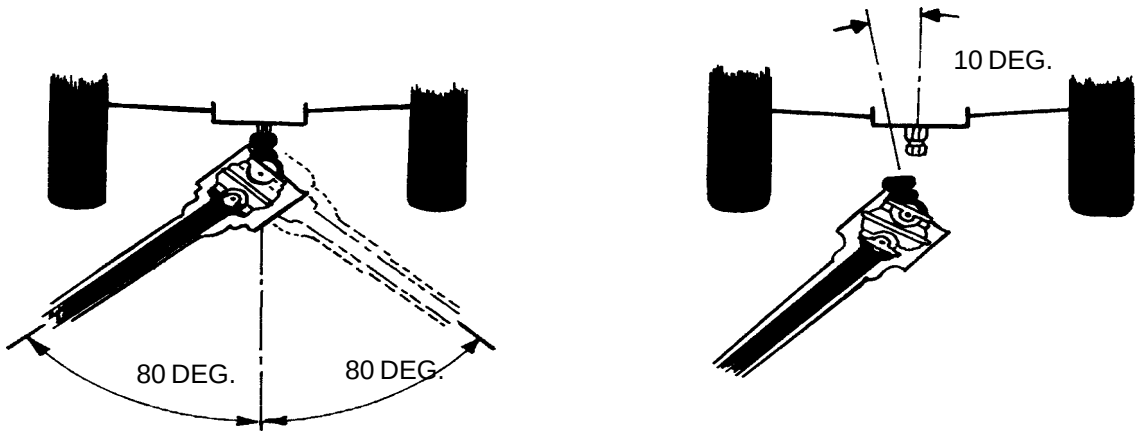
7.2 Constant Velocity (CV) Driveline

For mowers equipped with a Constant Velocity (CV) driveline, the maximum turning angle between the tractor and mower must be determined to ensure the joint angle does not over-extend which can cause CV joint damage. Constant Velocity joints enable the driveline to operate smoothly with no vibrations and clattering at angles up to 70°. Angles greater than 80° can result in mechanical damage to the CV joint and mower driveline.

The Constant Velocity joint must be lubricated every 8 hours of operation as specified in the Maintenance Section. Failure to properly lubricate the joint will result in accelerated wear and joint component failure.

CV Driveline Maximum Angle Check Procedure

1. With the **mower attached** to the tractor and the **driveline disconnected** from the tractor PTO stub make a hard left turn until there is approximately a 1" clearance between the left rear tractor tire and mower frame or tongue.
2. Stop and completely shut down the tractor. Place the tractor in Park and apply the Parking Brake before dismounting.
3. Check the CV joint at this maximum turning radius by holding the driveline yoke above the PTO shaft and then angle the CV joint to its maximum angle. A minimum difference of 10 degrees between the center line of the yoke and the PTO shaft must be maintained to ensure the joint will not be over angled. If the joint cannot be angled at least 10°, there is a potential problem of over-angling the joint while making sharp turns.
4. Solutions: To ensure the joint is not damaged, check the following:
   -Check the drawbar length to ensure that it is at the proper length for the RPM speed of the mower.
   -Move the tractor rear tires wider apart to limit the tractor turning radius.
   -Position the mower at multiple angles and perform the above procedure. Determine the sharpest turning radius that maintains a safe operating angle and note this position to the operator.



CONSTANT VELOCITY JOINT-MAXIMUM ANGLE CHECK

DANGER!

Do not turn so sharp or lift mower so high to produce a severe "knocking" of the Driveline which will cause accelerated wear and breakage of drive train components and could result in possible injury from the separated Driveline sections. (SRM-4)

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8. PRE-OPERATION INSPECTION AND SERVICE

Before each use, a pre-operation inspection and service of the mower and tractor must be performed. This includes routine maintenance and scheduled lubrication, inspecting that all safety devices are equipped and functional, and performing needed repairs. Do not operate the mower and tractor if the pre-operation inspection reveals any condition affecting safe operation. Perform repairs and replacement of damaged and missing parts as soon as noticed. By performing a thorough pre-operation inspection and service, valuable down time and repair cost can be avoided.

DANGER!

Always disconnect the main PTO Driveline from the Tractor before performing service on the Mower. Never work on the Mower with the Tractor PTO driveline connected and running. Blades or Drivelines could turn without warning and cause immediate entanglement, injury or death. (SRM-3)

DANGER!

DO NOT allow any person under a folded wing unless wing is securely locked up or supported. DO NOT approach the Implement unless the Tractor is turned off and all motion has ceased. Never work under the frame work, or any lifted component unless the implement is securely supported or blocked up. A sudden or inadvertent fall by any of these components could cause serious injury or even death. (STI-3)

WARNING!

Periodically inspect all moving parts for wear and replace when necessary with authorized service parts. Look for loose fasteners, worn or broken parts, and leaking or loose fittings. Make sure all pins have cotter pins and washers. Serious injury may occur from not maintaining this Implement in good working order. (SG-21)

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8.1 Tractor Pre-Operation Inspection/Service

Refer to the tractor operator's manual to ensure a complete pre-operation inspection and scheduled service is performed according to manufacturer recommendations. The following is a partial list of items requiring inspection:

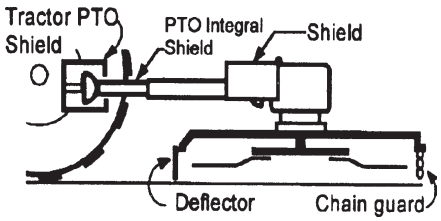
- Tire condition/air pressure
- Wheel lug bolts
- Steering linkage
- PTO shield
- SMV sign is clean and visible
- Tractor's lights are clean and functional
- Tractor Seat belt is in good condition
- Tractor cab or ROPS is in good condition
- ROPS is in the raised position
- No tractor oil leaks
- Radiator free of debris
- Engine oil level and condition
- Engine coolant level and condition
- Power brake fluid level
- Power steering fluid level
- Fuel condition and level
- Sufficient lubrication at all lube points
- Air filter condition

8.2 Mower Pre-Operation Inspection/Service

Before each mower use, a complete inspection and service is required to ensure the mower is in a good and safe working condition. Damaged and/or broken parts should be repaired and/or replaced immediately. To ensure the mower is ready for operation, conduct the following.

DANGER!

All Safety Shields, Guards and Safety devices including (but not limited to) - the Deflectors, Chain Guards, Steel Guards, Gearbox Shields, PTO integral shields, and the Retractable Door Shields should be used and maintained in good working condition. All safety devices should be inspected carefully at least daily for missing or broken components. Missing, broken, or worn items must be replaced at once to reduce the possibility of injury or death from thrown objects, entanglement, or blade contact. (SGM-3)



DANGER!

Replace bent or broken blades with new blades. NEVER ATTEMPT TO STRAIGHTEN OR WELD ON BLADES SINCE THIS WILL LIKELY CRACK OR OTHERWISE DAMAGE THE BLADE WITH SUBSEQUENT FAILURE AND POSSIBLE SERIOUS INJURY FROM THROWN BLADES. (SGM-10)

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- Ensure that the Manual Canister is secured to the mower with the Operator's Manual inside.
- Ensure all decals are in place and legible. Replace missing, worn, and unlegible decals.

NOTE: The mower Operator's Manual and affixed Decals contain important instructions on the safe and proper use of the mower. Maintain these important safety features on the mower in good condition to ensure the information is available to the operator at all times.

- Ensure the mower hitch is securely attached to the tractor drawbar with a proper size bolt and secured nut.
- Ensure that a properly rated safety tow chain is equipped securing the mower to the tractor.
- Check that the main driveline is securely attached to the tractor and the clamping cone is seated in the groove of the PTO shaft.
- Ensure the divider drivelines are secure at both ends

- Ensure chain guards and/or rubber deflectors are in position and not damaged. Replace worn, broken, and missing sections immediately.
- Ensure the driveline integral shields are in good condition and rotate freely.
- Inspect that all bolts and screws are in position and are properly torqued.

- Ensure the tractor PTO master shield is in place, lowered and in good condition.
- Ensure each mower slip clutch shield is secured in place and in good condition.
- Ensure the driveline slip clutches are properly adjusted and the friction plates are not frozen together. Reference the Maintenance Section for proper slip clutch maintenance.

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- Perform scheduled lubrication as specified in the maintenance section.
- Inspect each gearbox oil level and replenish if needed. A low oil level is a warning sign that the gearbox may be cracked or its seal is damaged and needs to be replaced.
- Ensure all gearbox vents are in place and free from clogs.

- Inspect blades and blade bolts for looseness and excessive wear. Make sure the mower is securely blocked up before crawling beneath. Replace damaged, worn, and missing blades as complete sets to maintain rotary balance.
- Ensure carrier hub nuts are tightened with the cotter pin inserted and spread.
- Inspect the condition of the deck skid shoes and the skid shoe attaching hardware.

- Ensure each hydraulic cylinder is installed and retained correctly. Ensure the proper size pins are used to retain the cylinders in place and are secured with pins.
- Check for hydraulic oil leaks on the cylinders, along the hydraulic lines, and at tractor hydraulic ports. **IMPORTANT**: DO NOT use your hands to check for oil leaks. Use a piece of heavy paper or cardboard to check for hydraulic oil leaks.

- Ensure that the mower is equipped and secured with wing brace supports.
- Check the condition of the wing hinge pins.
- Check the condition of the mower axle suspension spring.
- Inspect mower tire condition, wheel bearings, and lug nut torque.

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9. DRIVING THE TRACTOR AND MOWER

Safe tractor transport requires the operator possess a thorough knowledge of the model being operated and precautions to take while driving with an attached implement. Ensure the tractor has the capacity to handle the weight of the mower and the tractor operating controls are set for safe transport. To ensure safety while driving the tractor with an attached mower, review the following.

DANGER!

This Implement is wider than the Tractor. Be careful when operating or transporting this equipment to prevent the Implement from running into or striking sign posts, guard rails, concrete abutments or other solid objects. Such an impact could cause the Implement and Tractor to pivot violently resulting in loss of steering control, serious injury, or even death. Never allow the Implement to contact obstacles. (S3PT-12)

WARNING!

Transport only at safe speeds. Serious accidents and injuries can result from operating equipment at unsafe speeds. Understand the Tractor and Mower and how it handles before transporting on streets and highways. Make sure the Tractor steering and brakes are in good condition and operate properly. Before transporting the Tractor and Mower, determine the safe transport speeds for you and the equipment. Make sure you abide by the following rules:

1. **Test the Tractor at a slow speed and increase the speed slowly. Apply the Brakes smoothly to determine the stopping characteristics of the Tractor and Mower. As you increase the speed of the Tractor the stopping distance increases. Determine the maximum safe transport speed for you and this Equipment.**
2. **Test the equipment at a slow speed in turns. Increase the speed through the turn only after you determine that it is safe to operate at a higher speed. Use extreme care and reduce your speed when turning sharply to prevent the Tractor and Mower from turning over. Determine the maximum safe turning speed for you and this equipment before operating on roads or uneven ground.**
3. **Only transport the Tractor and Mower at the speeds that you have determined are safe and which allow proper control of the equipment.**

Be aware of the operating conditions. Do not operate the Tractor with weak or faulty brakes. When operating down a hill or on wet or rain slick roads, the braking distance increases, use extreme care and reduce your speed in these conditions. When operating in traffic, always use the Tractor's flashing warning lights and reduce your speed. Be aware of traffic around you and watch out for the other guy. (SG-19)

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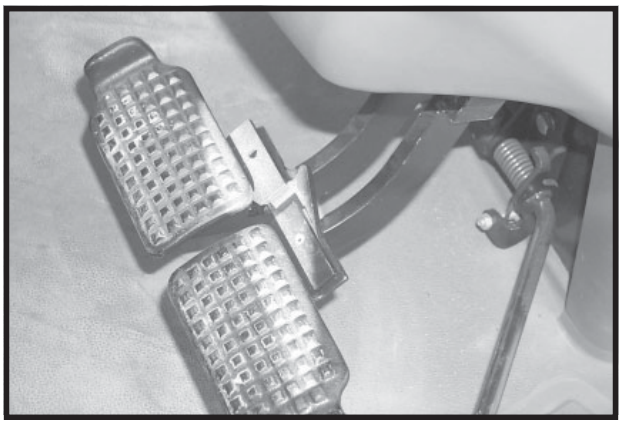
9.1 Starting the Tractor

The procedure to start the tractor is model specific. Refer to the tractor operator's manual for starting procedures for your particular tractor. Consult an authorized dealer if the starting procedure is unclear. Ensure the 3-point control lever is in the lowered position and the PTO is disengaged before starting the tractor.

9.2 Brake and Differential Lock Setting

Make sure the tractor brakes are in good operating condition. Tractor brakes can be set to operate independently allowing single rear wheel braking action or locked together to provide simultaneous rear wheel braking. FOR MOST DRIVING AND MOWING CONDITIONS, THE BRAKE PEDALS SHOULD BE LOCKED TOGETHER TO PROVIDE THE MOST EFFECTIVE BRAKING ACTION.



WARNING!

Be aware of the operating conditions. Do not operate the Tractor with weak or faulty brakes. When operating down a hill or on wet or rain slick roads, the braking distance increases; use extreme care and reduce your speed in these conditions. When operating in traffic, always use the Tractor's flashing warning lights and reduce your speed. Be aware of traffic around you and watch out for the other guy.

Always disengage the tractor differential lock when turning. When engaged the differential lock will prevent or limit the tractor from turning. During normal cutting conditions, locking the differential provides no benefit and should not be used.

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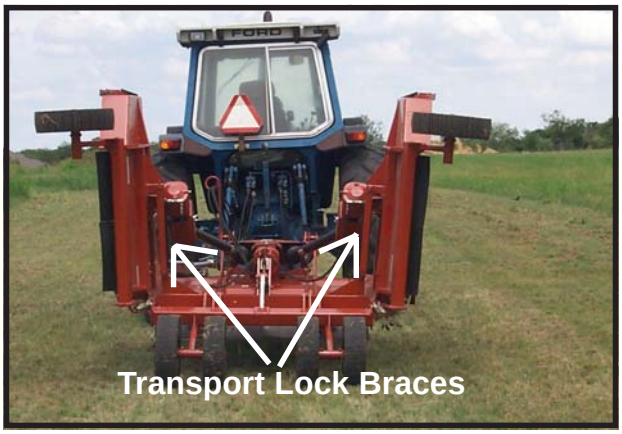
9.3 Operating the Mower Wings

Wings are positioned with hydraulic cylinders. It is recommended that the tractor be equipped with three hydraulic ports or a 3-spool control valve be used so that each section can be controlled independently. Ensure the hydraulic cylinders and lines are filled with oil by holding the valve control levers in the raised position until the cylinders fully retract (wings) and extend (center). Only operate the mower with both wings fully lowered, NEVER operate the mower with a raised wing. Wait until the blades are at a complete stop before raising wings.

Transport Position

To raise mower wings, drive the unit to a level area and retract the wing hydraulic cylinders. DO NOT raise wings with the mower positioned on an embankment or other inclined position to prevent overturning the mower. After the wings are fully raised, install transport lock braces to prevent wings from inadvertently falling. NOTE: If the transport lock braces can not be easily installed, lower the mower wings and remove rod end of cylinder and adjust the rod clevis in or out to match the transport brace length.



The center of gravity is raised and the mower more prone to tipping when the wings are in the raised position. When transporting, only raise the center section high enough to clear ground obstacles.

DANGER!

When the Wings are folded for transport, the center of gravity is raised and the possibility of overturn is increased. Drive slowly and use extreme caution when turning on hillsides. Overturning the Implement could cause the Implement to overturn the Tractor and vice versa resulting in serious injury or even death. Never fold wings on a hillside...the Implement may overturn. (STI-2)

Operating Position

To lower the wings, remove the transport lock braces and secure braces on storage bracket. DO NOT drive out transport brace pins. The wing cylinder may need to be retracted to remove tension for brace removal. After removing brace bars, extend wing hydraulic cylinders and fully lower wings.

The valves operating wing cylinders should be placed in the float position while mowing to allow the mower to follow the contour of uneven terrain and to prevent the wings from creeping up. When extending a wing over a ditch for mowing, place the control valve lever detents in the center position. This will give the mower more stability and prevent the opposite wing from raising. DO NOT operate the mower with the valves in the detent position for extended periods of time to prevent deck frame damage.

WARNING!

Use extreme care when lowering or unfolding the implement's wings. Make sure no bystanders are close by or underneath the wings. Allow ample clearance around the implement when folding or unfolding the wings. Use extreme caution around buildings or overhead power lines. (S3PT-5)

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9.4 Driving the Tractor and Mower

Start off driving at a slow speed and gradually increase your speed while maintaining complete control of the tractor and mower. Moving slowly at first will also prevent the tractor from rearing up and loss of steering control. The tractor should never be operated at speeds that cannot be safely handled or which will prevent the operator from stopping quickly during an emergency. If the power steering or engine ceases operating, stop the tractor immediately as the tractor will be difficult to control.

Drive the tractor with the 3-Point lift arms in the raised position and lock the control lever in the transport detent position to prevent damage to the mower driveline and tongue when turning.

Perform turns with the tractor and mower at slow speeds to determine how the tractor with an attached mower handles a turn. Determine the safe speed to maintain proper control of the tractor when making turns. When turning with a towed implement, the overall working length of the unit is increased. Allow additional clearance for the mower when turning, especially if the wings are lowered.

To avoid overturns, drive the tractor with care and at safe speeds, especially when operating over rough ground, crossing ditches or slopes, and turning corners. Tractor wheel tread spacing should be increased when working on inclines or rough ground to reduce the possibility of tipping.

Use extreme caution when operating on steep slopes. Keep the tractor in a low gear when going downhill. DO NOT coast or free-wheel downhill.

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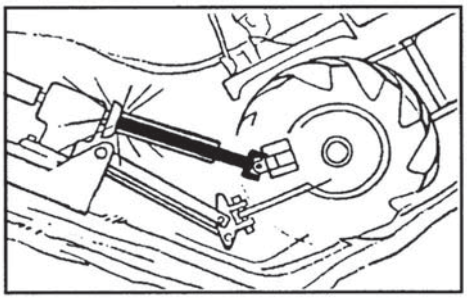
9.5 Crossing Ditches and Steep Inclines

When crossing ditches with steep banks or going up sharp inclines, it is possible that the main driveline inner profile will penetrate into the outer housing to its maximum depth until the assembly becomes solid (driveline is at its extreme shortest length). This type of abusive operation can cause serious damage to the tractor and mower drive by pushing the PTO into the tractor and through the support bearings or downward onto the PTO shaft, breaking it off.

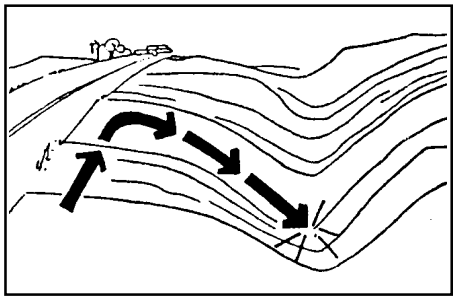


WARNING!

Damage resulting from over-collapse of the driveline's inner profile and its outer housing may allow the driveline to come loose from the Tractor which could cause bodily injury to the operator or bystanders and/or extensive damage to the Tractor or Implement

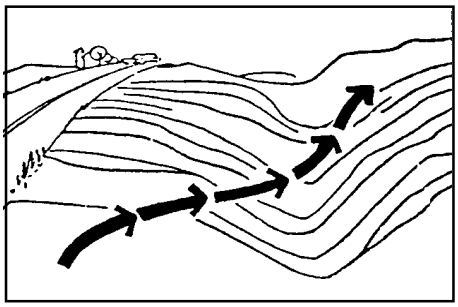
When confronted with an incline or ditch, do not approach from an angle which is perpendicular or straight on as damage to over collapse of the driveline may occur.

When crossing such terrain, the wings should be fully lowered for a lower center of gravity and added stability.



INCORRECT: DO NOT approach ditch straight on.

Inclines and ditches should be approached along a line which is at an angle as shown. This type of path will reduce the possibility of over-collapse of the driveline and resulting damage. If the gradient is so steep that such as approach increases the possibility of a tractor roll-over, select an alternate crossing path.



CORRECT: Approach ditch at an angle

When operating the tractor and mower across slopes and inclines, through ditches, and other uneven terrain conditions, it is important to maintain sufficient deck to ground clearance. Blade contact with the ground may cause soil, rocks and other debris to be thrown out from under the mower resulting in possible injury and/or property damage. Ground contact also produces a severe shock load on the mower drive and to the mower blades resulting in possible damage and premature wear.

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10. OPERATING THE TRACTOR AND MOWER

THE OPERATOR MUST COMPLETELY UNDERSTAND HOW TO OPERATE THE TRACTOR AND MOWER AND ALL CONTROLS BEFORE ATTEMPTING TO MOW. The operator must read and understand the Safety and Operation Sections of the mower and tractor operator's manuals. These manuals must be read and explained to any operator who cannot read. Never allow someone to operate the mower and tractor without complete operating instructions.

Before starting any mowing operation, the operator must become familiar with the area to be mowed and any obstacles and hazards contained within to ensure safety to the operator, bystanders, and equipment. Special attention should be paid to foreign debris, rough terrain, steep slopes, and passersby and animals in the area.

DANGER!

Extreme care should be taken when operating near loose objects such as gravel, rocks, wire, and other debris. Inspect the area before mowing. Foreign objects should be removed from the site to prevent machine damage and/or bodily injury or even death. Any objects that cannot be removed must be clearly marked and carefully avoided by the operator. Stop mowing immediately if blades strike a foreign object. Repair all damage and make certain the blade carrier is balanced before resuming mowing. (SGM-5)

DANGER!

Many varied objects, such as wire, cable, rope, or chains, can become entangled in the operating parts of the Mower head. These items could then swing outside the housing at greater velocities than the blades. Such a situation is extremely hazardous and could result in serious injury or even death. Inspect the cutting area for such objects before mowing. Remove any like object from the site. Never allow the cutting blades to contact such items. (SGM-6)

10.1 Foreign Debris Hazards

Before mowing, inspect the area to make sure there are no foreign objects that the mower blades could hit or become entangled with. Remove all foreign objects and debris. If objects are too big to remove, mark them clearly and be sure to prevent the mower blades from contacting them.

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If you hit a solid object or foreign debris, stop the mower and tractor at once. Immediately idle the engine speed and disengage the PTO. Wait for all mower rotating motion to stop, then raise the mower and move the tractor and implement off the object. Inspect the area and remove, or mark the location of the debris. Inspect the condition of the mower and make any needed repairs immediately. Make sure the blades are not damaged and the carrier is balanced before resuming operation.

Always wear your seat belt securely fastened and only operate the tractor and mower with the ROPS in the raised position. If the tractor or mower hits a tree stump, rock, or bump, a sudden movement could throw you off of the seat and under the tractor and/or mower The seat belt is your best protection from falling off the tractor and the ROPS provides protection from being crushed during a tractor roll-over.

10.2 Bystander/Passersby Precautions

If a bystander comes within 100 yards of the tractor while the mower is being operated, stop the tractor at once, idle the engine and disengage the PTO. Do not engage the PTO again until all bystanders are well past the 100 yard distance.

DANGER!

Rotary Mowers are capable under adverse conditions of throwing objects for great distances (100 yards or more) and causing serious injury or death. Follow safety messages carefully.

STOP MOWING IF PASSERSBY ARE WITHIN 100 YARDS UNLESS:

-Front and Rear Deflectors, Chain Guards, or Bands are installed and in good, workable condition;
-Mower sections or Wings are running close to and parallel to the ground without exposed Blades;
-Passersby are outside the existing thrown-object zone;
-All areas have been thoroughly inspected and all foreign material such as rocks, cans, glass, and general debris has been removed.

NOTE: Where there are grass and weeds high enough to hide debris that could be struck by the blades, the area should be: inspected and large debris removed, mowed at an intermediate height, inspected closely with any remaining debris being removed, and mowed again at the desired final height. (This will also reduce power required to mow, reduce wear and tear on the Mower drivetrain, spread cut material better, eliminate streaking, and make the final cut more uniform.) (SRM-1)

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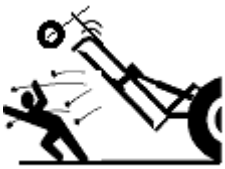
10.3 Engaging the Power Take Off (PTO)

Before engaging the PTO, make certain that the area is clear of bystanders and passersby. The mower wings must be completely lowered and the deck positioned at a safe mowing height. NEVER engage the PTO with the mower wings in the raised position.

Set the tractor engine speed at approximately 1,000 RPM before engaging the PTO. Shift the PTO control to the on position, and slowly increase the engine speed until the PTO is operating at the rated speed. If you hear unusual noises or see or feel abnormal vibrations, disengage the PTO immediately. Inspect the mower to determine the cause of the noise or vibration and repair the abnormality.

DANGER!

Do not let the Blades turn when the Mower deck is raised for any reason, including clearance or for turning. Raising the Mower deck exposes the cutting blades which creates a potentially serious hazard and could cause serious injury or even death from objects thrown from the blades. (SRM-7)



DANGER!

Do not put hands or feet under Mower decks. Blade contact can result in serious injury or even death. (SGM-9)

10.4 PTO RPM and Ground Speed

Ground speed for mowing will depend upon the height, type, and density of vegetation to be cut. Recommended speed for efficient mower performance is between 2 and 5 mph. Operate the mower at its full rated PTO speed to maintain blade speed for a clean cut. Refer to the tractor operator's manual or the tractor instrument panel for the engine speed and gear to provide the required PTO and desired ground speed. Make sure that the mower is operating at its full rated speed before entering the vegetation to be cut. If it becomes necessary to temporarily regulate engine speed, increase or decrease the throttle gradually.

Ground speed is achieved by transmission gear selection and not by the engine operating speed. The operator may be required to experiment with several gear range combinations to determine the best gear and range which provides the most ideal performance from the mower and most efficient tractor operation. As the severity of cutting conditions increase, the ground speed should be decreased by selecting a lower gear to maintain the proper operating PTO speed.

WARNING!

Do not exceed the rated PTO speed for the Implement. Excessive PTO speeds can cause Implement driveline or blade failures resulting in serious injury or death. (SG-26)

WARNING!

Mow at the speed that you can safely operate and control the Tractor and Mower. Safe mowing speed depends on terrain condition and grass type, density, and height of cut. Normal ground speed range is from 2 to 5 mph. Use slow mowing speeds when operating on or near steep slopes, ditches, drop-offs, overhead obstructions, power lines, or when debris and foreign objects are to be avoided. (SGM-7)

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10.5 Operating the Mower

Only operate the mower from the tractor operator's seat with the seatbelt securely fastened. The tractor must be equipped with a ROPS in the raised position or a ROPS cab.

The mower is designed to cut vegetation up to 2-1/2" in diameter. Sharp blades will produce a cleaner cut and require less power. Travel at a speed that allows the mower sufficient time to cut through the vegetation and maintain the PTO operating speed to prevent overloading the mower and tractor. Choose a driving pattern that provides the maximum pass length and minimizes turning.

Under certain conditions, tractor tires may roll some grasses down preventing them from being cut at the same height as the surrounding area. When this occurs, reduce the tractor ground speed while maintaining the operating speed of the mower. A slower ground speed will permit grasses to at least partially rebound and be cut. Taking a partial cut and/or reversing the direction of travel may also help produce a cleaner cut.

Avoid mowing in the reverse direction when possible. In situations where the mower must be backed to access areas to be cut, make sure there are no persons or other foreign debris behind the mower before mowing in reverse. When mowing in reverse, operate the tractor and mower at a reduced ground speed to ensure tractor and mower control is maintained.

WARNING!

Do not mow with two machines in the same area except with Cab tractors with the windows closed. (SGM-11)

DANGER!

Mow only in conditions where you have clear visibility in daylight or with adequate artificial lighting. Never mow in darkness or foggy conditions where you cannot clearly see at least 100 yards in front and to the sides of the Tractor and Mower. Make sure that you can clearly see and identify passersby, steep slopes, ditches, drop-offs, overhead obstructions, power lines, debris and foreign objects. If you are unable to clearly see this type of item discontinue mowing. (SGM-1)

DANGER!

Avoid mowing in reverse direction when possible. Check to make sure there are no persons behind the Mower and use extreme care when mowing in reverse. Mow only at a slow ground speed where you can safely operate and control the Tractor and Mower. Never mow an area in the reverse direction that you have not inspected and removed debris or foreign material. (SGM-8)

WARNING!

Follow these guidelines to reduce the risk of equipment and grass fires while operating, servicing, and repairing the Mower and Tractor:
-Equip the Tractor with a fire extinguisher in an accessible location.
-Do Not operate the Mower on a Tractor with an underframe exhaust.
-Do Not smoke or have an open flame near the Mower and Tractor.
-Do Not drive into burning debris or freshly burnt areas.
-Ensure slip clutches are properly adjusted to prevent excessive slippage and plate heating.
-Never allow clippings or debris to collect near drivelines, slip clutches, and gearboxes. Periodically shut down the Tractor and Mower and clean clippings and collected debris from the mower deck. (SGM-12)

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When you get to the end of a pass, slightly raise the mower (2-4") before turning. Never raise the mower entirely while the blades are turning. If the mower must be raised higher than 12" from ground level, disengage the tractor PTO and wait for all mower rotation to come to a complete stop before proceeding to raise the mower. NEVER raise the mower wings while the blades are turning.

When turning, the angle between the tractor and mower should not be so great that a clattering of the U-joints occurs. Sharp turns can cause premature failure of the joints and place pressure on the tractor PTO shaft and could cause extensive mechanical damage to the mower and tractor.

If the mower is operated in conditions that require frequent sharp turning, the mower should be equipped with a Constant Velocity driveline. CV joints enable the tractor PTO shaft and mower driveline to be angled safely up to 80 degrees with no damage to the mower or driveline.

WARNING!

Do not let the Blades turn when the Mower Deck is raised for any reason, including clearance or for turning. Raising the Mower deck exposes the Cutting Blades which creates a potentially serious hazard and could cause serious injury or even death from objects thrown from the Blades. (SRM-7)

Stay alert and watch for trees, low hanging limbs, power lines, and other overhead obstacles and solid ground objects while you are operating. Use care to avoid hitting these items.

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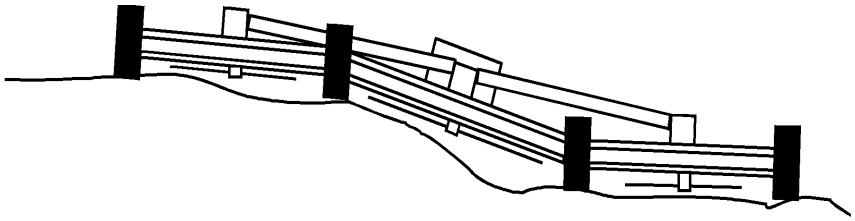
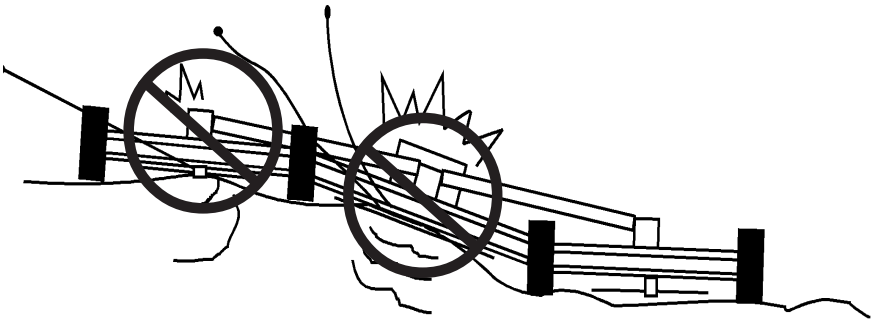
When mowing across uneven areas such as road shoulders, ditch edges, and other uneven terrain, position mower so that one support wheel is near the highest point to prevent blades from cutting into gravel or dirt which can cause rapid blade wear and extremely severe shock loads on the drivetrain resulting in rapid wear or damage to these components. Blades contacting the ground may cause objects to be thrown out from under the mower deck. Always avoid operating the mower at a height or position which may cause the blades to contact the ground. Cutting into the berm or edge of the ditch will cause abnormal and accelerated blade wear and possible blade component failure.



Correct Mower Deck Positioning



Wrong Mower Deck Positioning

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10.6 Shutting Down the Mower

To shut down the mower, first bring the tractor to a complete stop. Then slow down the mower by reducing the engine speed before disengaging the PTO. Wait for all rotating motion to stop before proceeding to drive or shut down the tractor.

Park the tractor on a level surface, place the transmission in park or neutral and apply the parking brake, lower the attached mower to the ground, shut down the engine, remove the key, and wait for all motion to come to a complete stop before exiting the tractor.

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11. DISCONNECTING THE MOWER FROM THE TRACTOR

DANGER!

Always shut the Tractor completely down, place the transmission in park, and set the parking brake before you or anyone else attempts to connect or disconnect the Implement and Tractor hitches. (S3PT-15)

WARNING!

Never unhitch without using the Tongue Jack. The Tongue is very heavy. Attempting to lift the Tongue without using the Tongue Jack could cause strains or other injury. Allowing the tongue to fall suddenly and unexpectedly could result in crushing injury. Use the Tongue Jack for lifting the Implement only. Overloading the Tongue Jack can cause failure with possible serious bodily injury or even death. (STI-4)

Before disconnecting the mower, the PTO must be disengaged and blade rotation at a complete stop. Move the mower to a level storage location and lower the center section and both wings to the ground. If the mower will be stored with the wings in the raised position, install both wing transport lock braces. If the mower is not resting securely on the ground, block the mower up securely before attempting to disconnect it from the tractor.

Use extreme care to keep feet and hands from under the mower and clear of any pinch points.

When disconnecting the mower the tractor should be completely shut down and secured in position. Relieve hydraulic pressure by moving the control levers back and forth several times. Lower the parking jack and raise the mower until the tongue clevis is no longer resting on the tractor drawbar and is supported solely by the jack. The jack should be in a near vertical position with the ground and can be adjusted by loosening the positioning nut and moving the jack up to 15 degrees in each direction. Also make sure that the jack foot is securely resting at ground level or securely supported by a block before raising the mower. Once the mower tongue is being supported entirely by the jack, remove the hitch bolt, locknut, and washers. Remove the hydraulic hoses from the tractor and secure to the mower to prevent contact with dirt.

After disconnecting the mower hitch, remove the mower driveline from the tractor PTO shaft. Place the driveline in its storage bracket to prevent it from contacting mud or dirt which can contaminate the universal joint bearings and shorten the life of the driveline.

After the driveline has been removed from the tractor, place the PTO master shield back in the operating position.

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12. MOWER STORAGE

It is recommended that the mower be stored with the center section and both wings fully lowered to ground level. If the mower is stored with the wings in the raised position, select a level area and install wing transport braces to prevent the wings from falling BEFORE disconnecting the mower hitch from the tractor.

Properly preparing and storing the mower at the end of the season is critical to maintaining its appearance and to help ensure years of dependable service. The following are suggested storage procedures:

1. Thoroughly clean all debris off the mower to prevent damage from rotting grass and standing water.
2. Lubricate all mower grease points and fill gearbox oil levels as detailed in the maintenance section.
3. Tighten all bolts and pins to the recommended torque.
4. Check the mower for worn and damaged parts. Perform repairs and make replacements immediately so that the mower will be ready for use at the start of the next season.
5. Store the mower in a clean, dry place with the mower housing resting securely on blocks or at ground level.
6. Keep the driveline yoke from sitting in water, dirt and other contaminants.
7. Use spray touch-up enamel where necessary to prevent rust and maintain the appearance of the mower.

DANGER!

Never allow children to play on or around the Tractor and Implement. Children can slip or fall off the Equipment and be injured or killed. Children can cause the Implement to shift or fall crushing themselves and others. (SG-25)

It is critical that driveline clutches slip when an obstacle or heavy load is encountered to avoid mower and/or tractor damage. If the mower sits outside for an extended period of time or is exposed to rain and/or humid air, the clutch lining plates must be inspected to ensure they are not frozen together from rust or corrosion. If the mower has been exposed to such conditions, at the start of each mowing season, and any time it is suspected that the slip clutch plates may be frozen together, readjust the slip clutch as detailed in Seasonal Clutch Maintenance of the maintenance section in this manual.

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13. TRANSPORTING THE TRACTOR AND MOWER

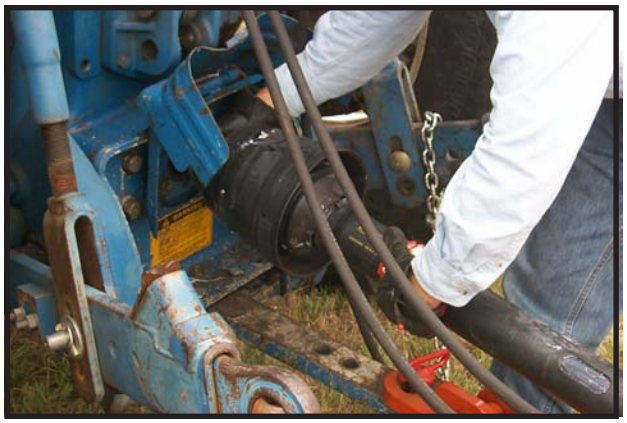
Inherent dangers of operating the tractor and mower and the possibility of accidents are not left behind when you finish mowing an area. Therefore, the operator must employ good judgement and safe operation practices when transporting the tractor and mower between locations. By using good judgement and following safe transport procedures, the possibility of accidents while moving between locations can be substantially minimized.

DANGER!

Never allow children or other persons to ride on the Tractor or Implement. Falling off can result in serious injury or death.
(SG-10)

Before transporting the tractor and mower, idle the tractor engine, disengage the PTO and wait for all mower moving parts to come to a complete stop. Raise the mower wings and secure in position with transport lock braces. When transporting, only raise the center deck enough to clear ground obstacles to prevent tipping, especially when traveling through rough terrain.

If the tractor's hydraulic pump is not independent of the tractor PTO, or if the tractor PTO has to be run to have hydraulic power, disconnect the mower driveline from the tractor PTO output shaft. Secure the driveline to the mower deck to prevent driveline damage or loss during transport.



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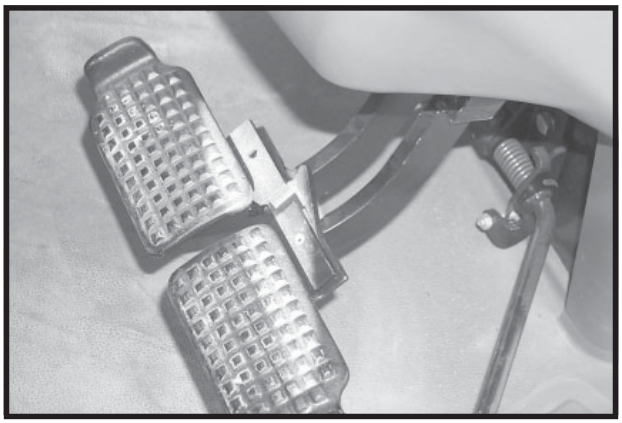
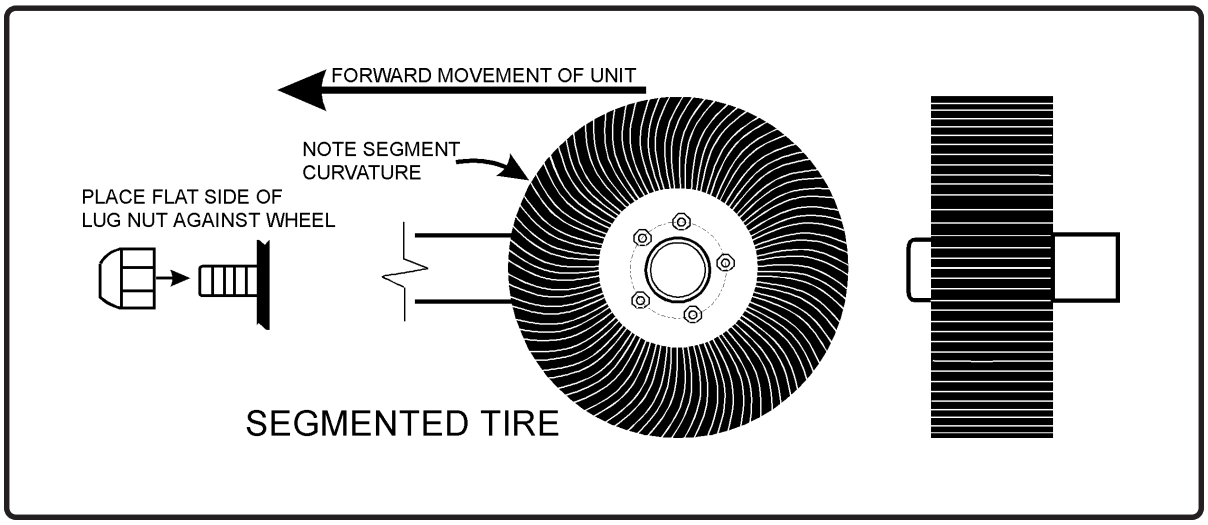
Before transporting the tractor on a public roadway or boarding a trailer for transport, the tractor brake pedals should be locked together. Locking the pedals ensures that both wheels brake simultaneously while stopping, especially when making an emergency stop.

Use extreme caution and avoid hard applications of the tractor brakes when towing heavy loads at road speeds. Never tow the mower at speeds greater than 20 MPH.



Tires and Wheels

Laminated Sectional Tires are designed for conditions where puncture proof performance is required and the mower will not be transported for long distances on roadways. Transport speed for laminated tires should not exceed 10 MPH. Excessive speed can cause damage to the machine and tire sections. Sectional tires must be installed such that the rubber segments lay with the ground.



Foam Filled used Airplane Tires are ideal for conditions where a puncture proof tire is needed and the mower is frequently transported between locations.

Pneumatic Tires (used airplane of implement tires) are ideal for frequent long distance towing, however, they are not puncture proof and are not recommended for mowing brushy areas or other conditions that could damage the tires. Recommended tire pressure is 15-20 PSI. DO NOT over-inflate.

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13.1 Transporting on Public Roadways

WARNING!

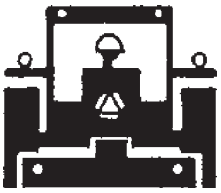
Only tow the Implement behind a properly sized and equipped Tractor which exceeds the weight of the Implement by at least 20%. DO NOT tow the Implement behind a truck or other type of vehicle. Never tow the Implement and another Implement connected in tandem. Never tow the Implement at speeds over 20 MPH. (STI-6)

DANGER!

Never allow children or other persons to ride on the Tractor or Implement. Falling off can result in serious injury or death. (SG-10)

WARNING!

Make certain that the "Slow Moving Vehicle" (SMV) sign is installed in such a way as to be clearly visible and legible. When transporting the Equipment use the Tractor flashing warning lights and follow all local traffic regulations. (SG-6)



Extreme caution should be used when transporting the tractor and mower on public roadways. The tractor must be equipped with all required safety warning features including a SMV emblem and flashing warning lights to alert drivers of the tractor's presence. Remember that roadways are primarily designed for automotive drivers and most drivers will not be looking out for you, therefore, you must look out for them. Check your side view mirrors frequently and remember that vehicles will approach quickly because of the tractor's slower speed. Be extremely cautious when the piece of equipment that you are towing is wider than the tractor tire width and/or extends beyond your lane of the road.

Make sure that a proper size safety tow chain is secured between the tractor and mower before entering a public road. Secure the center section at a safe transport height by placing additional stroke control spacers on the center axle cylinder and then lower the mower. Secure the mower wings in the raised position with the transport lock braces.

The SMV (Slow-Moving Vehicle) emblem is universal symbol used to alert drivers of the presence of equipment traveling on roadways at a slow speed. SMV signs are a triangular bright orange with reflective red trim for both easy day and night visibility. Make sure the SMV sign is clean and visible from the rear of the unit before transporting the tractor and mower on a public roadway. Replace the SMV emblem if faded, damaged, or no longer reflective.

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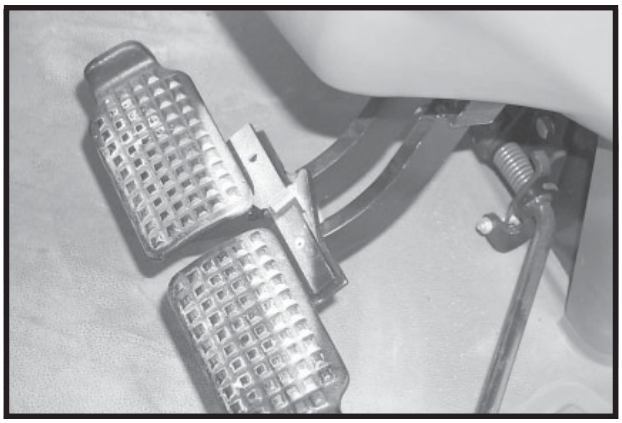
Make sure that all tractor flashing warning lights, headlights, and brake/taillights are functioning properly before proceeding onto public roads. While newer model tractors have plenty of lighting to provide warning signals and operating lighting, most older models where only equipped with operating lights. Consult an authorized tractor dealer for lighting kits and modifications available to upgrade the lighting on older tractor models.

When operating on public roads, have consideration for other road users. Pull to the side of the road occasionally to allow all following traffic to pass. Do not exceed the legal speed limit set in your country for agricultural tractors. Always stay alert when transporting the tractor and mower on public roads. Use caution and reduce speed if other vehicles or pedestrians are in the area.

Reduce speed before turning or applying the brakes. Ensure that both brake pedals are locked together when operating on public roads.



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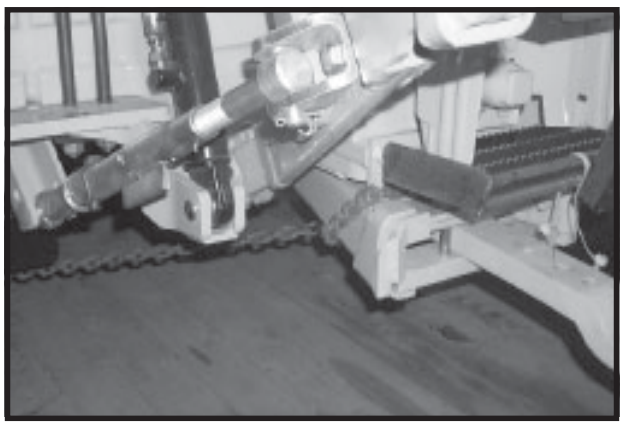
13.2 Hauling the Tractor and Mower

Before transporting a loaded tractor and mower, measure the height and width dimensions and gross weight of the complete loaded unit. Ensure that the load will be in compliance with the legal limits set for the areas that will be traveled through.

Use adequately sized and rated trailers and equipment to transport the tractor and mower. Consult an authorized dealer to determine the proper equipment required. Using adequately sized chains, heavy duty straps, cables and/or binders, securely tie down both the front and rear of the tractor utilizing the proper tie down locations as specified by the tractor manufacturer.

Arrange the chains so that when tightened, the chains are pulling downward and against themselves. Carefully tighten the securing chains or other fasteners used as much as possible using boomers or binders to apply maximum tension. Use extreme care when attaching and removing the securing devices as the extreme tension involved when released has the potential to inflict serious injury.



While hauling the tractor and mower, make occasional stops to check that the tractor and mower have not moved or shifted and that the securing chains have maintained tension. If during transport a hard braking, sharp turning, or swerving action was performed, stop at the next safe location to inspect the security of the load.

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14. TROUBLE SHOOTING GUIDE

TROUBLE	POSSIBLE CAUSE	POSSIBLE REMEDY
Excessive Vibrations	1. Check gear box bolts.	Tighten if loose.
	2. Check for loose nuts on bladeholder and blades.	Tighten if loose.
	3. Check for bent output shaft. If shaft is bent, oil will normally leak from bottom seal.	Replace shaft if bent.
	4. Check to see if blades are free swinging.	Free blades so they swing.
	5. Check for even wear on each blade tip. Were both blades changed at the same time?	Weigh blades. Weight should be within 1 oz. Always replace both blades.
	6. Blade broken.	Replace blades, in sets.
	7. Blade carrier bent.	Replace carrier.
	8. Blade hub not properly seated on shaft.	Remove hub, check tapered spline shaft, clean and replace.
	9. New blade or bolts matched with worn blade or bolts.	Replace blades or bolts in sets.
	10. Drivelines not phased correctly. Implement & Tractor yokes must be in line.	Replace driveline.
Gear Box Overheating	1. Low on lubricant.	Fill to level plug.
	2. Improper type lubricant.	Replace with proper lubricant.
	3. Excessive trash build-up around gear box.	Remove trash.
	4. Bearing or gears set up improperly.	Consult your Dealer.

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TROUBLE SHOOTING

TROUBLE	POSSIBLE CAUSE	POSSIBLE REMEDY
Gear Box Noisy	1. Rough gears.	Run in or change gears.
	2. Worn bearing.	Replace bearing.
Gear Box Leaking	1. Damaged oil seal.	Replace seal.
	2. Bent shaft.	Replace oil seal and shaft.
	3. Shaft rough in oil seal area.	Replace or repair shaft.
	4. Oil seal installed wrong.	Replace seal.
	5. Oil seal not sealing in the housing.	Replace seal or use a sealant on OD of seal.
	6. Oil level too high.	Drain oil to proper level.
	7. Sand hole in casting.	Replace castings or gear box.
	8. Gasket damaged.	Replace gasket.
	9. Bolts loose.	Tighten bolts.
Clutch Slips Excessively	1. Clutch linings badly worn or plates warped.	Repair clutch per maintenance section of manuals.
	2. Too much power for clutch.	Reduce ground speed and material intake.
	3. Oil on facings.	Replace facings.
	4. Friction facings glazed.	Clean with emery cloth.
Blade Wears Too Fast	1. Cutting in sandy conditions.	Increase cutting height.
	2. Cutting in rocky conditions.	Increase cutting height.
	3. Soft "will fit" blades.	Use genuine Rhino HT blades.
Hydraulic Cylinder Will Not Operate	1. Not enough pressure.	Check pressure.
	2. Valve not connected properly.	Re-plumb valve.
	3. Quick coupler not completely connected.	Complete connection.

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TROUBLE SHOOTING

TROUBLE	POSSIBLE CAUSE	POSSIBLE REMEDY
Oil Squirting from Breather Vent Hole	1. Oil leaking by piston ring. (A small amount of leakage is normal)	Do not carry cutter on cylinder. (Use stroke collars)
	2. Piston "O" ring worn.	Replace piston "O" ring.
	3. Cylinder wall scored or pitted.	Replace cylinder.
	4. Wrong piston ring on piston.	Use correct piston rings.
Not Cutting Clean	1. Blades dull.	Sharpen or replace blades.
	2. Blade rotation incorrect.	Use correct blade for carrier rotation.
	3. Carrier RPM too low.	Use correct PTO speed and check for correct gear box ratio.
	4. Cutter not level.	Adjust machine.
	5. Tires mashing down grass.	Move tires out of cutter overlap area. Minimum 60" inside tires.
	6. Ground speed too fast.	Reduce ground speed.
	7. Blades locked back.	Free blades.
	8. Blades riding up due to blade bolt wear.	Replace blade bolts.
Streaking Conditions In Swath	1. Conditions too wet for cutting. Blades unable to cut that part of grass pressed down by path of tractor tires.	Allow grass to dry before cutting. Slow ground speed of tractor but keep engine running at full PTO rpm. Move rear tires as wide as possible so wing blades will pick up grass.
	2. Dull Blades.	Sharpen or replace blades.
	3. Height of cutter lower at rear or front.	See Cutting Height Instructions.

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MAINTENANCE SECTION

MAINTENANCE

Before operating your Rotary Cutter, make sure it is properly lubricated and thoroughly inspected. Only a minimum of time and effort is required to regularly lubricate and maintain this machine to provide long life and trouble free operation.

WARNING Always disengage the PTO before raising the Rotary Cutter for transporting or making adjustments.

LUBRICATION INFORMATION

Do not let excess grease collect on or around parts, particularly when operating in sandy areas. The accompanying illustration shows lubrication points. The chart gives the frequency of lubrication in hours, based on normal operating conditions. Severe or unusual conditions may require more frequent lubrication. **FIGURE 1.**

Use an SAE multi-purpose, lithium-type grease for all grease fittings. Gearboxes use EP 90w gear oil. Be sure to clean the fitting thoroughly before using grease gun. Daily lubrication of the wing driveline slip joint is necessary. Failure to maintain proper lubrication will result in damage to U-joints, gearbox, and/or driveshaft.

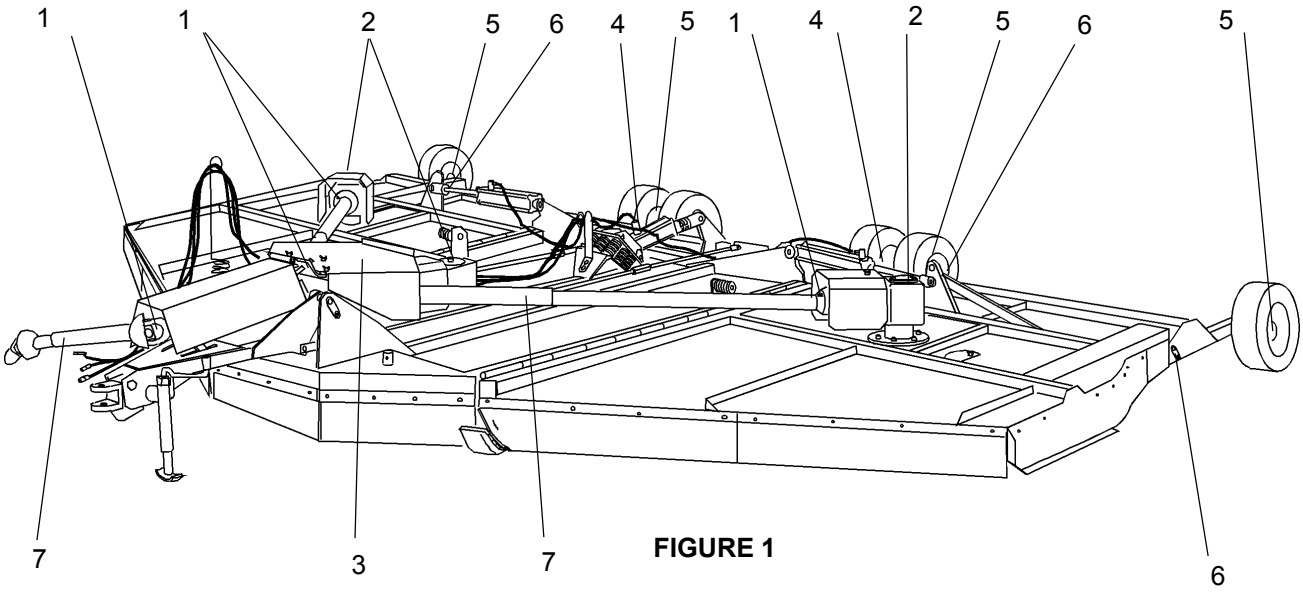

FIGURE 1

Lubrication Fitting Location

ITEM	DESCRIPTION	FREQUENCY
1	U-Joints	8 hours
2	Gearbox	Check daily
3	Divider Gearbox	Check daily
4	Axle Adjustment Rod	8 Hours
5	Wheel Hubs	Weekly
6	Axle Pivot Points	8 Hours
7	Driveline Slip Joints	8 Hours

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TONGUE

The Tongue Hitch Pins attach the Tongue to the Center Section and should be checked for signs of wear or cracking. Replace as needed. The Drawbar 1" Bolt fastens the cutter to the tractor Drawbar. When the cutter is unhitched and this 1" Bolt is removed, examine for signs of cracking or wear. Replace the Drawbar 1" Bolt at first sign of either problem. Attach Safety Chain securely to cutter and tractor.

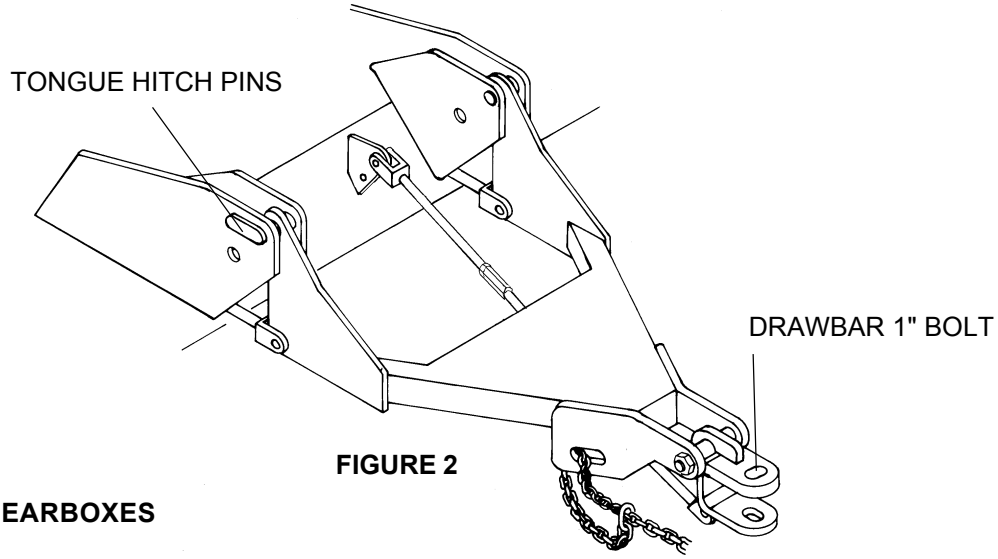

FIGURE 2

CENTER & WING GEARBOXES

The Gearboxes have been filled with lubricant to the Test Plug Level prior to shipment. However, you should check the oil level at Test Plug before operating, and frequently thereafter.

The gearbox should not require additional lubricant unless the box is cracked or a seal is leaking. It is recommended that the oil level plug be removed after every 8 to 10 hours of operation and oil added until it runs out Test Plug hole. The Test Plug on the Center Gearbox, Right & Left Wing Gearbox is located on the side of the Gearboxes. Filler Plugs are located on top of all Gearboxes. **FIGURE 3.**

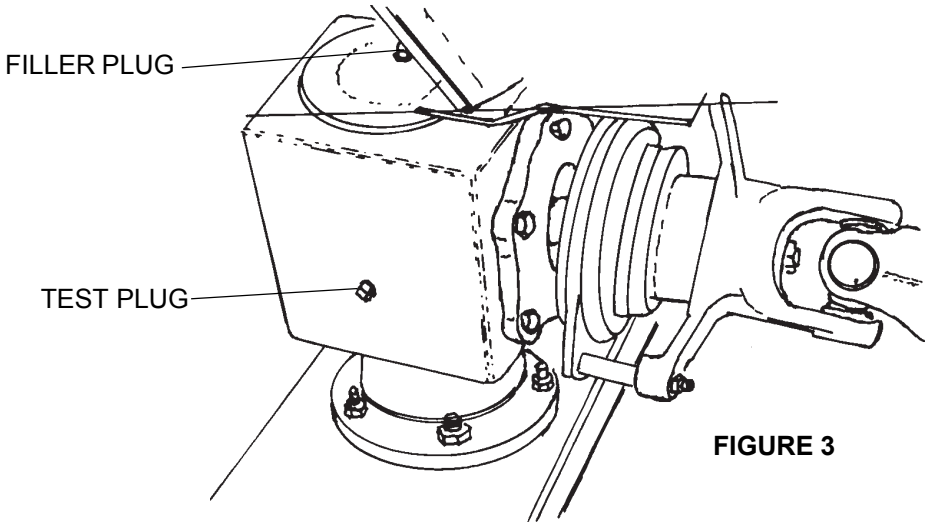

FIGURE 3

Recommended lubricant is a SAE EP85W14OT (PN 00769031) with EP additives for extreme pressure and temperature, with a APL-GI-5 Service rating. This tube has a tack agent added so oil sticks to parts when box is not running. The gearbox capacity is two quarts.

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DIVIDER GEARBOX

The Test Plug for the Divider Gearbox is located on the right side of the input shaft. The filler pressure relief Plug is on top of the Gearbox. **FIGURE 4.**

CAUTION Do not over-fill. If Gearboxes are filled above Test Plug Level, pressure under working conditions may cause the Grease Seals to leak.

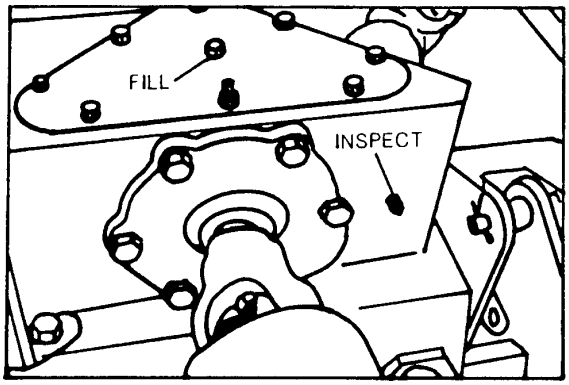

FIGURE 4

Recommended lubricant is a SAE EP85W140T (P/.N 00769031) with EP additives for extreme pressure and temperature, with a APL-GI-5 Service rating.

DRIVELINES

The Drivelines and U-Joints should be inspected each morning before the Cutter is started. **FIGURE 5 & 6.**

The U-Joint and CV Joint on the Driveline undergo extreme forces when the unit is turning or when the Wings are being raised. It is important that the U-Joints and CV Joint be greased each day before the unit is started. The U-Joints are located at each end of the Center and Wing Drivelines. The CV Joint is located at the end of the Main Driveline. The U-Joint and CV Joint assemblies are accessible by rotating the Driveline Safety Shield until the hole in the Shield matches up with the Grease Fitting. Use #2 Bearing Grease for lubrication. Inspect the U-Joint for wear by holding the shaft on one side of the U-Joint while trying to rotate the shaft on the other side of the U-Joint. If there is noticeable movement in the Driveline replace the U-joint before it causes severe damage to the Driveline.,

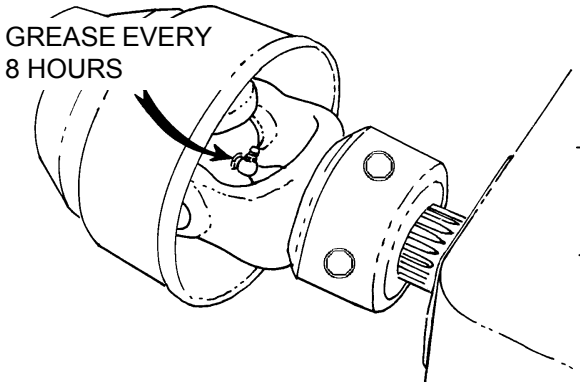

FIGURE 5

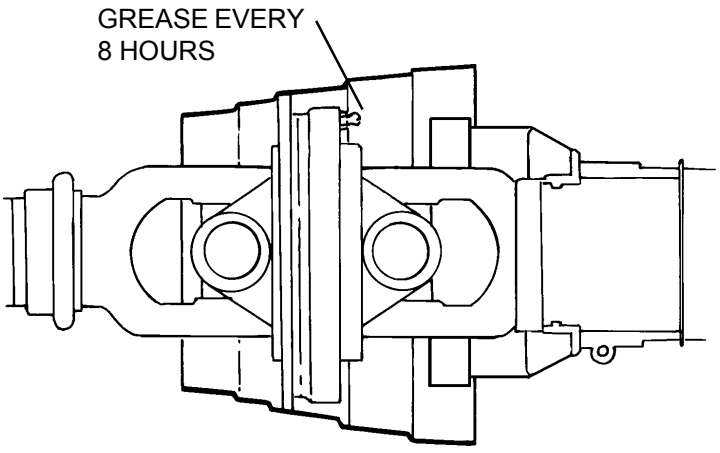

FIGURE 6

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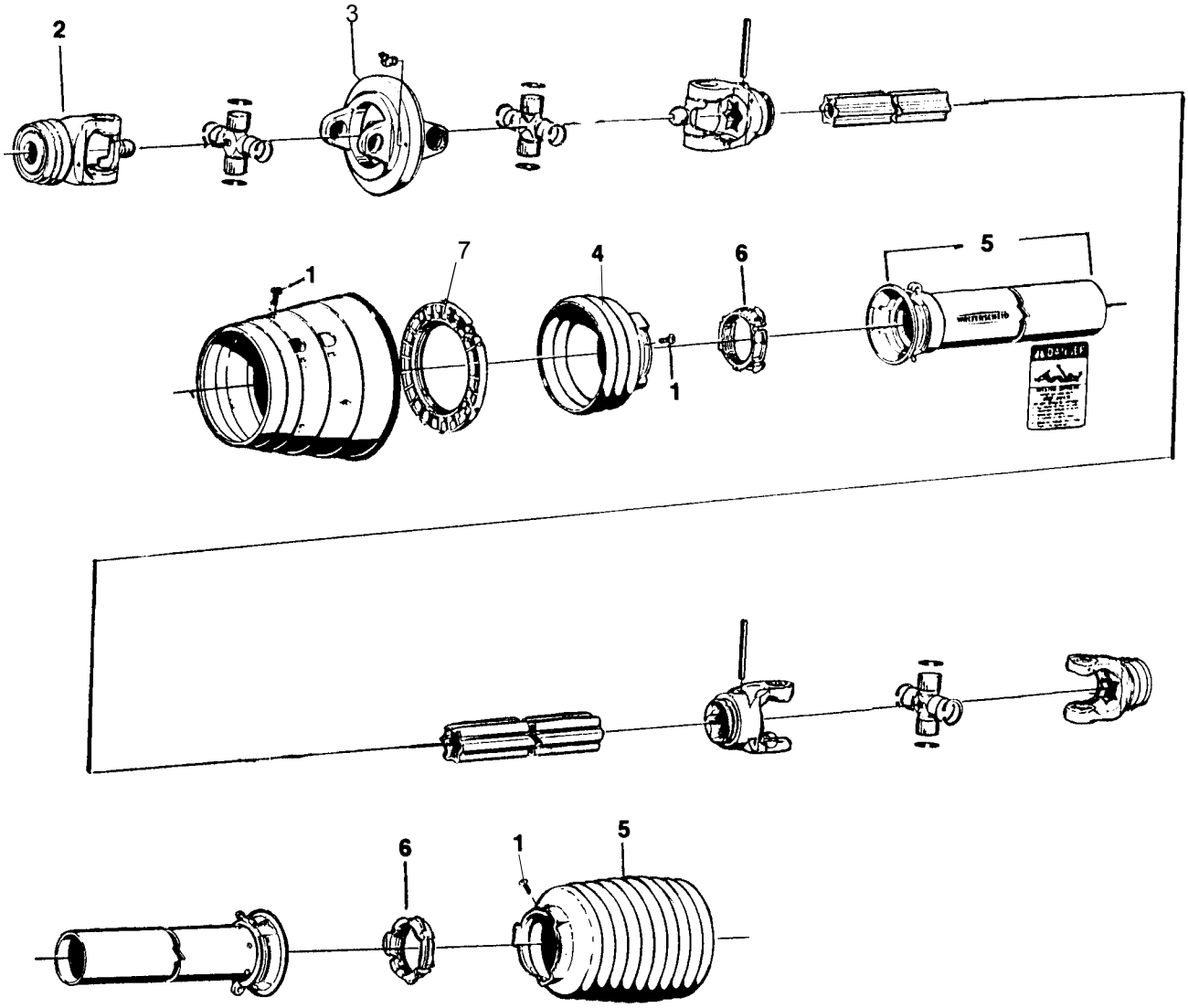
MAIN CV DRIVELINE SAFETY SHIELD (FIGURE 7)

1. To remove Outer CV Cone remove the 6 screws (#1) from shield cone. Remove cone forward over yoke (#2). Shield bearing (#7) is split and can be removed by spreading and removing from groove in CV Body (#3).

2. To remove Shields over telescoping Members remove the screws (#1) from cone (#4 or #5). Twist cone (#4 or #5) until slot openings in cone align with tabs on bearing (#6). Pull on shield tube and assembly will disengage from bearing. Shield bearing is split and can be removed by spreading and removing from groove in yoke.



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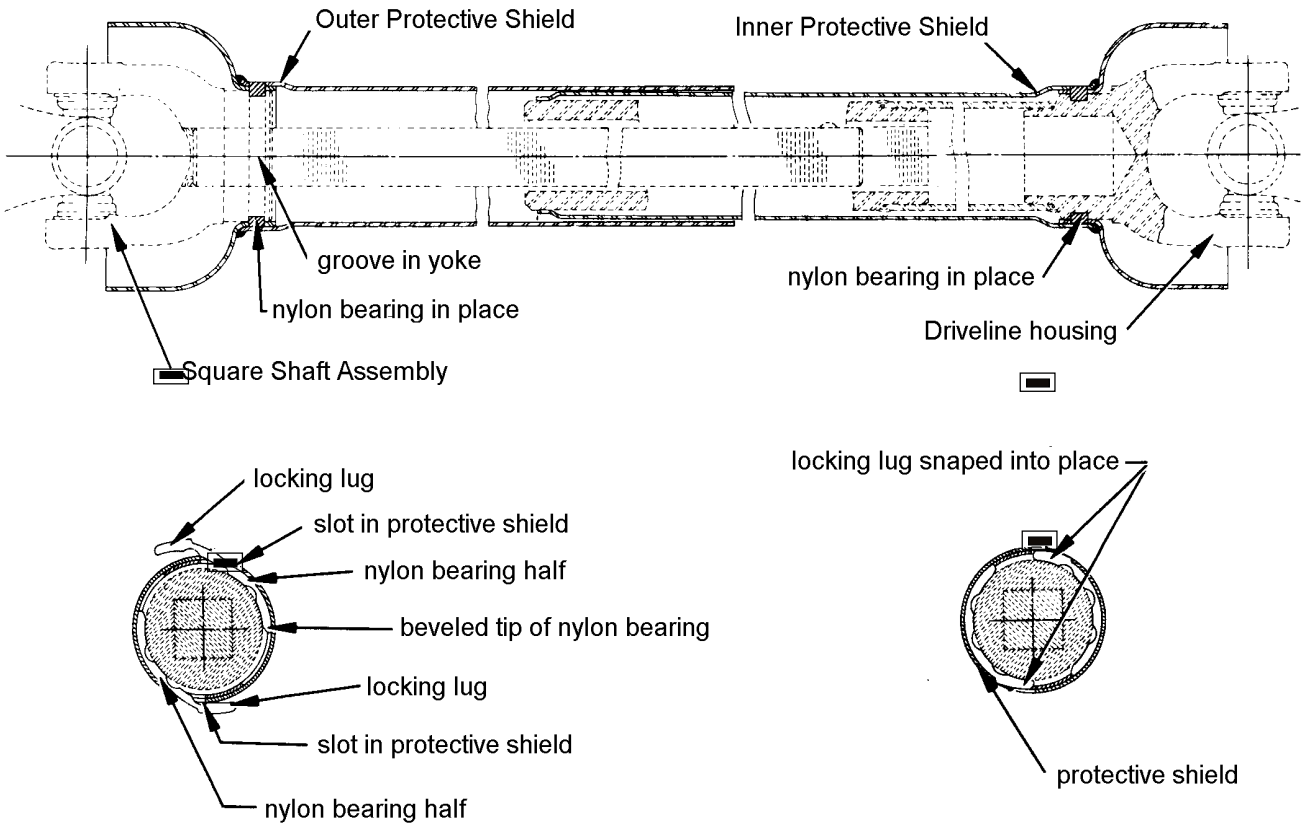
PROTECTIVE, INTEGRAL SHIELDS - 44R

Protective Driveline Shields should be installed on Drivelines as shown below in **FIGURE 8**. The protective Integral Shields are assembled onto nylon bearings and should turn freely - but should not spin. Greasing the nylon bearings is not required but will not harm them. Each Shield Bearing is composed of two nylon bearing halves. They may be removed by prying the locking lug of the nylon bearing out of the slot in the Shield and pulling the bearing out through the slot. To replace the nylon bearings, align the slot in the shield over the groove in the Yoke of the Driveline. Insert the beveled tip of the nylon bearing into the slot of the shield and push into place. Push the locking lug of the nylon bearing into the slot until it snaps into place.

CAUTION Driveline Integral Shields must be in place at all times when operating.

FIGURE 8. Protective Driveline Shields Installation



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PROTECTIVE, INTEGRAL SHIELDS - 55R 1000 RPM (WING DRIVELINES)

To remove the shield from this drive line insert a screwdriver in the slot of the cone (as shown in **FIGURE 9**) and push the retaining ring downward and forward out of groove toward large opening of cone.

Steel Shield
To assemble the shield slide the retaining ring over the yoke hub. Slip the Bearing into the raceway of the yoke. With the Shield held vertically in a vice, or similar support, place the driveline half into the shield, lining up the bearing and the bearing cone. Insert Screwdrivers through slots in cone, and pry retaining ring into groove in cone. From open end of cone, push the retaining ring into groove using 2 screwdrivers.
Be sure that the retaining ring is fully seated in groove.

FIGURE 9 Removing Driveline Shield

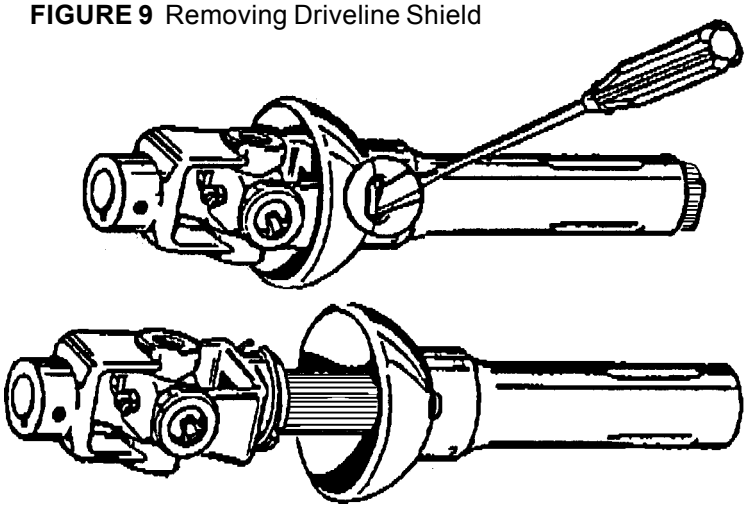
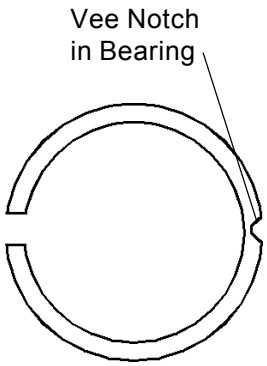


FIGURE 10 Bearing



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BLADE SERVICING

Inspect blades before each use to determine that they are properly installed and in good condition. Replace any blade that is bent, excessively nicked, worn, or has any other damage. Small nicks can be ground out when sharpening.

WARNING Use only original equipment blades on this cutter. They are made of special heat-treated alloy steel. **WILL-FIT BLADES MAY NOT MEET SPECIFICATIONS AND MAY FAIL CATASTROPHICALLY AND CAUSE BODILY INJURY OR DEATH.**

BLADE SHARPENING

Always sharpen both blades at same time to maintain balance. Follow original sharpening pattern as shown in **FIGURE 11**. Always sharpen blades by grinding. DO NOT heat and pound out edge. Do not sharpen blade to a razor edge, but leave a 1/16" blunt edge. Do not sharpen back side of blade.

IMPORTANT: When sharpening blades, grind each blade the same amount to maintain balance. The difference in blade weights should not exceed 1 ounce. Unbalanced blades will cause excessive vibration which can damage gear box bearings. Vibration may also cause structural cracks in cutter housing.

WARNING Never work under equipment supported by a hydraulic device because it may drop if the control is actuated (even with the engine stopped) or in the event of hose failure, etc. Always use a secure support for equipment which must be serviced while in the raised position.

DANGER! Replace bent or broken blade with new blades. NEVER ATTEMPT TO STRAIGHTEN OR WELD ON BLADES SINCE THIS WILL LIKELY CRACK OR OTHERWISE DAMAGE THE BLADE WITH SUBSEQUENT FAILURE AND POSSIBLE SERIOUS INJURY FROM THROWN BLADES. (SGM-10)

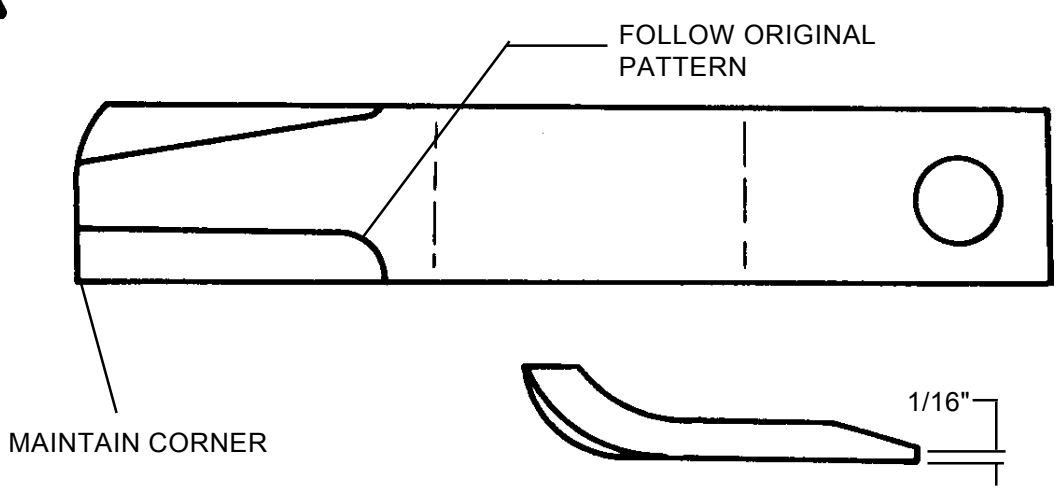

FIGURE 11

DANGER Inspect Blades daily for abnormal wear. If Blades have a notch worn into the leading edge at the lower bend more than a **1/2" DEEP (FIGURE 12)** (due to running in gravel and/or the ground), **REPLACE BOTH BLADES ON THAT CARRIER IMMEDIATELY**. Failure to replace such abnormally worn blades may lead to catastrophic failure of the blade and ejection of the broken part with tremendous force which may cause bodily injury or death!

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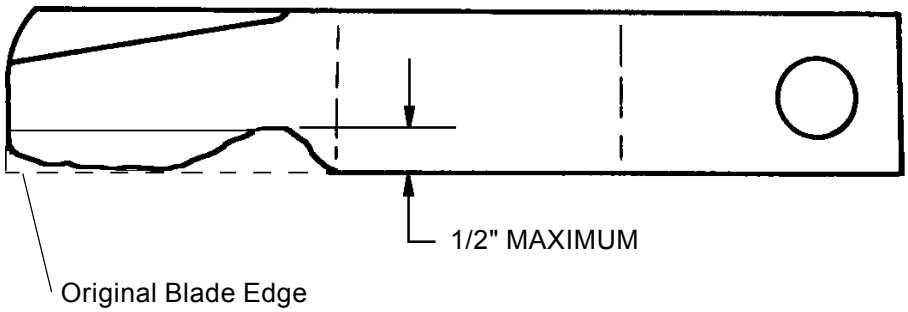

FIGURE 12. Excessive Blade Wear

NOTE: Replace Blades in pairs after no more than 1/2" notch wear!

BLADE REMOVAL

To remove blades for sharpening or replacement, remove the cover plate on deck of cutter near each gear box. Remove locknut from blade bolt - note: These are Left-Hand Threads. Inspect lock nut after removal and replace if threads are damaged. Always replace nut when replacing blade bolt. When installing blades, be sure to check blade bolt pivot diameter for wear. Replace bolt if worn more than 1/4" at any point. Install blade bolts with worn side of bolt away from the center of the blade carrier. Tighten lock nut to 300 ft. lbs.

WARNING Avoid personal injury. Blade and/or blade carrier removal should be done only with the tractor engine shut off, key removed, in neutral, parking brake on , PTO disengaged, and the cutter blocked in the raised position.

BLADE CARRIER REMOVAL

Remove cotter pin and loosen slotted nut on gear box shaft. Loosen but do not remove the nut until the blade carrier is loosened. Use a suitable two-jaw gear puller to pull carrier off tapered gear box shaft. If gear puller is not available use long bar inserted through blade bolt access hole with end against rotor bar. Strike opposite end of bar with sledge hammer. Rotate blade carrier 180 degrees and repeat process.

BLADE CARRIER INSTALLATION

Clean the taper and keyway on both the blade carrier and output shaft. Position carrier on the gear box output shaft and install flat washer and 1" hex nut. Tighten the nut holding the blade carrier to minimum 450 ft. pounds. Strike the carrier on the hub several times with a heavy hammer to seat the hub. Use a suitable spacer over the nut to prevent damage to the nut and threads. Retighten the nut to 450 ft. pounds. Install and spread cotter pin.

***NOTE**: After a few hours of operation always recheck blade carrier retaining nut torque.*

WARNING Avoid personal injury. Do not work under cutter without support blocks to keep frame from falling.

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TORQUE LIMITER

Avoid overheating of the Torque Limiter by too long or too frequent slipping since this can damage the friction plates and limiter parts. When checking the Torque Limiter for overheating, DO NOT touch with hand. It could be extremely hot and cause severe burn.

If an adjustment is required, this may be done in the field by following the procedure outlined below. Following these instructions will give maximum rated torque and long life. See **FIGURE 13**.

(a) With the three Capscrews (#8) backed out until the points are below the surface of the circular Adjusting Nut (#7), run Adjusting Nut up finger-tight, or slightly less than finger-tight.

(b) Alternately tighten the hardened, cup point Capscrews (#8) no more than one-half turn at a time until the Capscrew heads "Bottom Out". Do not over tighten the Capscrews nor completely flatten the Spring Washers (#5).

If the Hub is removed from the Shaft for any reason, the Shaft and Hub should be coated with a heavy grease before reassembly to prevent Hub from freezing to Shaft.

SEASONAL TORQUE LIMITER MAINTENANCE

It is important that the Torque Limiter slips when an obstacle or load heavier than the setting is encountered. Before using the Torque Limiter each season, use the following procedure to make sure it will slip and give the overload protection required.

1. Loosen Bolts (1) until gap between adjusting nut (2) and guide ring is approximately 1/16".

2. Attach machine to tractor, set engine at approximately half throttle and quickly engage PTO. This procedure will break clutch facings loose and allow the proper torque to be maintained.

3. Return the bolts to their original position as described in (b) above.

NOTE: If machine sits outside longer than 30 days and is exposed to rain and humid air, the Torque Limiter should be removed from machine and stored in a dry area. Torque Limiter facings will soak up moisture and cause the metal plates to rust badly. When this occurs, the break-away torque increases greatly and damage to gearbox, driveline, or tractor PTO can occur.

SLIP CLUTCH REPAIR PROCEDURE

1. Remove two bolts from top cover plate which holds shield bracket to gear box.

2. Remove locknuts #11 from bolts #12.

3. Remove cotter pin #13, castle nut #14, and washer #15. NOTE: It may be necessary to rotate yoke to remove cotter pin. Remove driveline yoke from shaft.

4. Loosen three bolts #8 until large nut #7 maybe removed from hub #1.

5. Remove all parts from hub #1.

6. Clean or sand outer plates #2 and center plate #4 to remove rust or burned lining material from plates.

7. Reassemble clutch as shown in figure 11 replacing parts as necessary.

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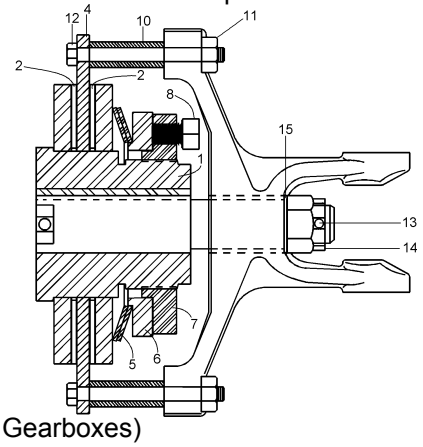
8. Install driveline yoke onto shaft and install four bolts through yoke spacers #10 and center plate #4. Install locknuts and tighten.

9. Rotate yoke and center plate so that cotter pin #13 can be installed.

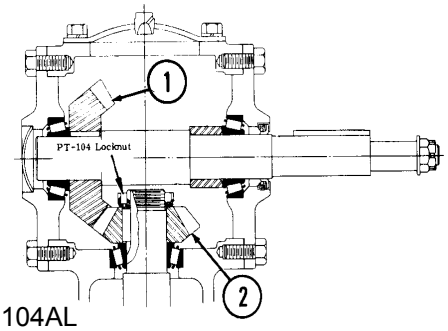
10. Tighten large nut #7 as much as possible by hand. NOTE: Make sure both springs #5 are centered on guide ring #6.

11. Reinstall washer #15 and castle nut #14. CAUTION: Do not tighten nut #14. Tighten only enough to remove play between the yoke, washer #15, and nut #14. Install cotter pin.

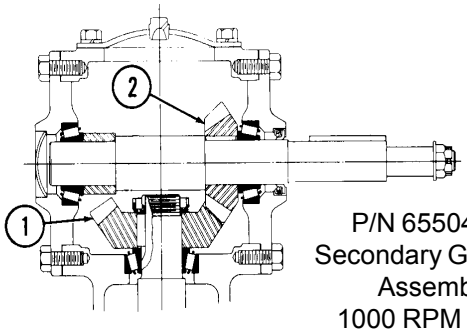


GEARBOX ARRANGEMENTS (Secondary Gearboxes)

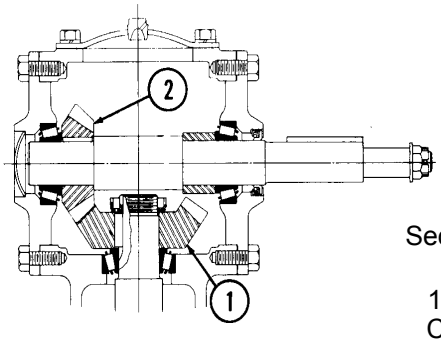
All Three secondary Gearboxes have the same identical parts in them for 540 or 1000 RPM and for the left, center, or right sections. To change Gearbox from 540 to 1000 RPM, the Gear (#1) and Pinion (#2) must be reversed. Remove the Gear from the Cross Shaft and the Pinion from the vertical Output Shaft. Install the Gear on the vertical output shaft and the pinion on the Cross Shaft. Reassemble the Gearbox allowing .008 to .012 backlash. Repeat this procedure on all three Gearboxes. When removing the Bearings and Gears, do not mar the Grease Seal Race. Be extremely careful when installing the Grease Seals so they will not be damaged.



P/N 65104AL
Secondary Gearbox
Assembly
540 RPM Input
CCW ROTATION



P/N 65504AR
Secondary Gearbox
Assembly
1000 RPM Input
CCW ROTATION



P/N 65504AL
Secondary Gearbox
Assembly
1000 RPM Input
CW ROTATION

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HYDRAULIC HOSES

Replace pinched and broken Hydraulic Hoses at once. Tighten any Hydraulic Fitting with fluid leaking from it. If fluid still leaks, loosen the fitting, apply a pipe thread compound to the threads and tighten. Care must be exercised when tightening Hydraulic Fittings. Too much tightening can cause the fittings to crack and require replacement fittings.

Although a small amount of oil will be present from bleeding at all Hydraulic Fittings, significant amounts of oil leaking around the Breather Plug on the Cylinder indicates that the seal in the Cylinder is worn out. Replace the seals in the Cylinder immediately before the Cylinder is damaged or too much hydraulic fluid is lost.

SKID SHOES

Skid shoes are made of carbon steel to reduce wear and increase service life. Premature wear can be caused by the cutter Wing sections being set too low which allows the Wing Skid Shoes to drag on the ground. Dragging the Skid Shoes on the ground or running the Skid Shoes into solid objects can contribute to early frame failure on the cutter. Replace worn Skid Shoes as required.

WHEEL BEARINGS

Every six months, the Wheel Hubs should be removed. Remove, clean, and inspect the bearings making certain that they are free of all signs of pitting, rust, decay, or deformation. If any of these problems exist, the Cups and Cones in the Wheel Hub should be replaced. Replace the Cups and Cones as a set. This prevents a continuation of the original problem. If the bearings are in good shape, pack them with grease.

Put the Bearing and Seal back into the Wheel Hub and replace the Hub. Tighten the adjusting nut until there is noticeable drag while turning the Wheel. Back off just enough to provide a free-rolling fit. Insert and spread the Cotter Pin. Install the Hub Cap. Fill the Hub completely with #2 Bearing Grease.

HARDWARE

Check nuts, bolts, and other miscellaneous hardware regularly. Loose hardware is easily lost, causes increased wear on parts, and increases the chance of breakdown. Loose hardware creates potential hazards which could result in personal injury to the operator, support personnel, and bystanders. Use the “Torque Chart” below when tightening bolted connections.

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PROPER TORQUE FOR FASTENERS

The chart lists the correct tightening torque for fasteners. When bolts are to be tightened or replaced, refer to this chart to determine the grade of bolts and the proper torque except when specific torque values are assigned in manual text.

RECOMMENDED TORQUE IN FOOT POUNDS UNLESS OTHERWISE STATED IN THE MANUAL*

NOTE: *These values apply to fasteners as received from supplier, dry or when lubricated with normal engine oil. They do not apply if special graphited or molydisulphide greases or other extreme pressure lubricants are used. This applies to both UNF fine and UNC coarse threads.*

Proper Torque values for bolts that are measured in Inches

Bolt Diameter	Head Marking No Marks Grade Two	Head Marking Three Lines Grade Five	Head Marking Six Lines Grade Eight
	Pound - Foot Value Dry	Pound - Foot Value Dry	Pound - Foot Value Dry
1/4"	5.5	9	12.5
5/16"	11	18	26
3/8"	20	33	46
7/16"	32	52	75
1/2"	50	80	115
9/16"	70	115	160
5/8"	100	160	225
3/4"	175	280	400
7/8"	175	450	650
1"	270	675	975
1-1/8"	375	850	1350
1-1/4"	530	1200	1950
1-3/8"	700	1550	2550
1-1/2"	930	2100	3350

Proper Torque values for Metric bolts

Bolt Diameter	Head Marking 4.8	Head Marking 8.8 or 9.8	Head Marking 10.9	Head Marking 12.9
	Pound - Foot Value Dry	Pound - Foot Value Dry	Pound - Foot Value Dry	Pound - Foot Value Dry
6mm	4.5	8.5	12	14.5
8mm	11	20	30	35
10mm	21	40	60	70
12mm	37	70	105	120
14mm	60	110	165	190
16mm	92	175	255	300
18mm	125	250	350	410
20mm	180	350	500	580
22mm	250	475	675	800
24mm	310	600	850	1000
27mm	450	875	1250	1500
30mm	625	1200	1700	2000

* To get Newton-Meters multipy pound-foot of torque by 1.356

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SERVIS-RHINO

LIMITED WARRANTY

1. LIMITED WARRANTIES

1.01. Servis-Rhino warrants for one year from the purchase date to the original non-commercial, governmental, or municipal purchaser ("Purchaser") and warrants for six months to the original commercial or industrial purchaser ("Purchaser") that the goods purchased are free from defects in material or workmanship.

1.02. Manufacturer will replace for the Purchaser any part or parts found, upon examination at one of its factories, to be defective under normal use and service due to defects in material or workmanship.

1.03. This warranty does not apply to any part of the goods which has been subjected to improper or abnormal use, negligence, alteration, modification, or accident, damaged due to lack of maintenance or use of wrong fuel, oil, or lubricants, or which has served its normal life. This warranty does not apply to any part of any internal combustion engine, or expendable items such as blades, shields, guards, or pneumatic tires except as specifically found in your Operator's Manual.

1.04. Except as provided herein, no employee, agent, Dealer, or other person is authorized to give any warranties of any nature on behalf of Manufacturer.

1.05. Some parts are covered by an extended warranty. Refer to the inside back cover of your Operator's Manual for extended coverage, if any.

2. REMEDIES AND PROCEDURES.

2.01. This warranty is not effective unless the Purchaser returns the Registration and Warranty Form to Manufacturer within 30 days of purchase.

2.02. Purchaser claims must be made in writing to the Authorized Dealer ("Dealer") from whom Purchaser purchased the goods or an approved Authorized Dealer ("Dealer") within 30 days after Purchaser learns of the facts on which the claim is based.

2.03. Purchaser is responsible for returning the goods in question to the Dealer.

2.04. If after examining the goods and/or parts in question, Manufacturer finds them to be defective under normal use and service due to defects in material or workmanship, Manufacturer will:

(a)Repair or replace the defective goods or part(s).

(b) Reimburse Purchaser for the cost of the part(s) and reasonable labor charges (as determined by Manufacturer) if Purchaser paid for the repair and/or replacement prior to the final determination of applicability of the warranty by Manufacturer.

(c)The choice of remedy shall belong to Servis-Rhino.

2.05. Purchaser is responsible for any labor charges exceeding a reasonable amount as determined by Manufacturer and for returning the goods to the Dealer, whether or not the claim is approved. Purchaser is responsible for the transportation cost for the goods or part(s) from the Dealer to the designated factory.

3. LIMITATION OF LIABILITY.

3.01. MANUFACTURER DISCLAIMS ANY EXPRESS (EXCEPT AS SET FORTH HEREIN) AND IMPLIED WARRANTIES WITH RESPECT TO THE GOODS INCLUDING, BUT NOT LIMITED TO, MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

3.02. MANUFACTURER MAKES NO WARRANTY AS TO THE DESIGN, CAPABILITY, CAPACITY, OR SUITABILITY FOR USE OF THE GOODS.

3.03. EXCEPT AS PROVIDED HEREIN, MANUFACTURER SHALL HAVE NO LIABILITY OR RESPONSIBILITY TO PURCHASER OR ANY OTHER PERSON OR ENTITY WITH RESPECT TO ANY LIABILITY, LOSS, OR DAMAGE CAUSED OR ALLEGED TO BE CAUSED DIRECTLY OR INDIRECTLY BY THE GOODS INCLUDING, BUT NOT LIMITED TO, ANY INDIRECT, SPECIAL, CONSEQUENTIAL, OR INCIDENTAL DAMAGES RESULTING FROM THE USE OR OPERATION OF THE GOODS OR ANY BREACH OF THIS WARRANTY. NOTWITHSTANDING THE ABOVE LIMITATIONS AND WARRANTIES, MANUFACTURER'S LIABILITY HEREUNDER FOR DAMAGES INCURRED BY PURCHASER OR OTHERS SHALL NOT EXCEED THE PRICE OF THE GOODS.

3.04. NO ACTION ARISING OUT OF ANY CLAIMED BREACH OF THIS WARRANTY OR TRANSACTIONS UNDER THIS WARRANTY MAY BE BROUGHT MORE THAN TWO (2) YEARS AFTER THE CAUSE OF ACTION HAS OCCURRED.

4. MISCELLANEOUS.

4.01. The laws of the State of Texas shall govern the construction of this agreement. Venue for any lawsuits shall be in Guadalupe County, Texas.

4.02. Manufacturer may waive compliance with any of the terms of this limited warranty, but no waiver of any terms shall be deemed to be a waiver of any other term.

4.03. If any provision of this limited warranty shall violate any applicable law and is held to be unenforceable, then the invalidity of such provision shall not invalidate any other provisions herein.

KEEP FOR YOUR RECORDS

ATTENTION: Purchaser should fill in the blanks below for his reference when buying repair parts and/or for proper machine identification when applying for warranty.

Servis-Rhino Implement Model _____ Serial Number _____

Date Purchased _____ Dealer _____

ATTENTION:
READ YOUR OPERATOR'S MANUAL

RHINO®
1020 S. Sangamon Ave.
Gibson City, IL 60936
800-446-5158
Email: parts@servis-rhino.com

TO THE OWNER/OPERATOR/DEALER

In addition to the standard Limited Warranty shown on the facing page, Servis-Rhino also provides:

1.) A FIVE-YEAR (60 months) LIMITED WARRANTY* on **GEARBOX components** provided they have been properly maintained† and have not been subjected to abuse or mis-use except as limited below.

* WARRANTY LIMITATIONS - GEARBOX
A) Warranty is ONE-YEAR (12 MONTHS) for Seals (After one year, seals are considerd to be WEARING PARTS and replacment is the users' responsiblity.)
B) Users' Gearboxes may be rebuilt by Servis-Rhino or replaced by new or rebuilt Gearboxes at the option of Servis-Rhino.

2.) TWO-YEAR (24 months) LIMITED WARRANTY** on the **DRIVELINE components** provided they have been properly maintained† and have not been subjected to abuse or mis-use.

* *WARRANTY LIMITATIONS - DRIVELINE
A) Warranty is ONE-YEAR (12 MONTHS) for DRIVELINE SHIELDS except that evidence of wear from contact with other parts on the shield voids this waranty.
B) Shield Bearings are wearing parts and are not warrantable.
C) Slip-Clutch Disks are wearing parts and are not warrantable. Evidence of "buring up" Slip Clutch Plates due to improper adjustment will void warranty on Slip Clutch Parts.

† NOTE - "properly maintained" specifically includes, but is not limited to:
A) Running Gearboxes with the proper amount of the correct lubricant.
B) Adjusting Slip Clutches correctly to provide proper protection for Driveline and Gearbox Components.

To keep your implement running efficiently and safely, read your manual thoroughly and follow these directions and the Safety Messages in this Manual. The Table of Contents clearly identifies each section where you can easily find the information you need.

The OCCUPATIONAL SAFETY AND HEALTH ACT (1928.51 Subpart C) makes these minimum safety requirements of tractor operators:

REQUIRED OF THE OWNER:

1. Provide a Roll-Over-Protective Structure that meets the requirements of this Standard; and
2. Provide Seatbelts that meet the requirements of this paragraph of this Standard and SAE J4C; and
3. Ensure that each employee uses such Seatbelt while the tractor is moving; and
4. Ensure that each employee tightens the Seatbelt sufficiently to confine the employee to the protected area provided by the ROPS.

REQUIRED OF THE OPERATOR

1. Securely fasten seatbelt if the tractor has a ROPS.
2. Where possible, avoid operating the tractor near ditches, embankments, and holes.
3. Reduce speed when turning, crossing slopes, and on rough, slick, or muddy surfaces.
4. Stay off slopes too steep for safe operation.
5. Watch where you are going - especially at row ends, on roads, and around trees.
6. Do not permit others to ride.
7. Operate the tractor smoothly - no jerky turns, starts, or stops.
8. Hitch only to the drawbar and hitch points recommended by the tractor manufacturer.
9. When the tractor is stopped, set brakes securely and use park lock, if available.

FL20M-SOM-10/03
Printed U.S.A.
P/N 00766693C

An **Alamo Group** Company

SERVIS-RHINO®
1020 S. Sangamon Ave.
Gibson City, IL 60936-9907

Please fold (do not tear), tape, and drop in any mailbox.

PLEASE FILL OUT OWNER WARRANTY REGISTRATION INFORMATION SIGN, AND DROP LAST COPY IN ANY MAILBOX.

IMPORTANT!
TO PLACE THIS WARRANTY IN EFFECT, THIS WARRANTY REGISTRATION MUST BE FILLED OUT, SIGNED, AND MAILED WITHIN 30 DAYS OF DELIVERY DATE OF THIS MACHINE. DEALER AND PURCHASER MUST SIGN.

ATTENTION: ANY CLAIM SUBMITTED TO SERVIS-RHINO® WILL BE REFUSED UNTIL COMPLETED, SIGNED WARRANTY REGISTRATION CARD IS ON FILE.

BEFORE MAILING WARRANTY CARD, MAKE SURE ALL INFORMATION IS LEGIBLE

SERVIS-RHINO® WARRANTY REGISTRATION INFORMATION

Servis-Rhino Model ____ Serial No. ____ Purchase Date MONTH ____ DAY ____ YEAR ____

Purchaser Last Name ____ First Name ____ M.I. ____

Street & No., RFD, Box, &/or Apt. No. ____

City ____ State or Province ____ ZIP ____

Dealer ____

City ____ State or Province ____ ZIP ____

• I have informed the Purchaser of this product of Warranty terms, provisions, and procedures that are applicable, reviewed the contents of the Operator's Manual including safety equipment, safe operation, and maintenance, reviewed the Safety Signs on implement (and tractor if possible), shown the AEM Mower Safety Practices Video, and reviewed Purchaser's responsibility to train his operators in safe operation.

• **IMPLEMENTS**: I have explained that Deflectors, Chain Guards, or Solid Skirts must be maintained in good repair and installed except in areas where persons, vehicles, livestock, or other property will not be endangered by thrown objects and where such safety equipment would prevent the mower's reasonable performance of its assigned task.

• **DRIVELINES:** I have made certain that all driveline, gearbox, and other shields are in good repair and fastened securely in place to prevent injuries from entanglement or thrown objects.

• **HYDRAULIC MACHINES:** I have explained the necessity of using clean hydraulic oil, changing filters as instructed, stopping leaks, damage caused by operating with over-heated oil, caring for hoses, using hoses of proper rating, the necessity of maintaining the specified operating pressure, and the potential hazard of oil's penetrating the skin.

• **BOOM-TYPE or FOLDING-TYPE IMPLEMENTS:** I have explained that it is not possible to guard against thrown objects when the head is lifted off ground and that operator is responsible to watch out for persons in the area. I have explained that the lifted mower head or boom can contact overhead obstructions with damage to cables and telephone lines and possible injury. I have explained that the extended head or boom or retracted boom can contact power lines with resulting electrocution injury or death and that operator is responsible for keeping clear of such hazards.

Dealer's Signature _____ **Date** _____

I have been instructed on the paragraphs above, received and have been shown the AEM Mower Safety Practices Video and have been instructed in the contents of the Operator's Manual including safety signs, safety equipment, safe operation, maintenance, and the potential hazards of unauthorized alteration or modification of the product. I have been informed of the warranty provisions and know that the warranty is not in effect until this form is received by Alamo Group.
I understand the Implement Guarding statements above and the potential hazards of operating without such guards. I understand that the operator is responsible for the safety of others in the area. I have examined the product and accept it as being complete and in satisfactory condition with all required guards.

Purchaser's Signature _____ **Date** _____

Do not tear. Do not tear.

PRE-DELIVERY SERVICE
CHECK AND ADJUST OR LUBRICATE AS REQUIRED

See Operator's Manual for Details

Inspection Performed - Warranty and Safety Procedures Explained - Installation Complete

LUBRICATION & HYDRAULICS
- ☐ Gearboxes & Speed Increaser (Oil Levels)
- ☐ Hydraulic Oil Level (External. Tank)
- ☐ Tractor Hydraulic Oil Level
- ☐ Hydraulic Hoses (No Kinks, Binds, or Leaks)
- ☐ Hydraulic Hose Connections are Tight (No Leaks)

MOWER
- ☐ Spindle And Motor Bolts Properly Torqued
- ☐ Spindle Housing Bearings are lubricated
- ☐ Blade Carrier Bolts Properly Torqued / Retaining Pin In Place
- ☐ Mower Cutting Height And Level Adjusted
- ☐ Belt Alignment And Tension Adjusted
- ☐ Driveline Clutch (Torque Limiter) (Adjust And Run In)
- ☐ All Hardware Properly Torqued
- ☐ Tire Air Pressure / Lug Nuts (Correct Torque)
- ☐ Wheel Bearings (Check, Grease, And Preload)

ATTACHMENTS & INSTALLATION
- ☐ Thrown Object Deflectors Front And Rear
- ☐ Correct Blade Rotation Direction
- ☐ Wing transport locks and latches
- ☐ Mower head transport support bracket
- ☐ All Bolts - Pins And Nuts (Proper Torque)

MOWER TO TRACTOR CONNECTION
- ☐ Draw Bar Length (Check And Set)
- ☐ Axle Height (Adjusted)
- ☐ Cutting Height (Adjust)
- ☐ Mount Kit Pre-Operation Check Complete
- ☐ Mower Wing (Adjust Level With The Center)
- ☐ Mower Wing (Check For Proper Raising Operation)
- ☐ Pull Type Hitch (Height Adjustment)
- ☐ Mounting Hardware Properly Torqued

SAFETY ITEMS
- ☐ Protective Shields (Operation And Installation)
- ☐ S.M.V. Emblem (Installed)
- ☐ Neutral Safety & Cut - Off Switches work properly
- ☐ Safety Decals (Installed in good condition)
- ☐ Operator's Manual (Supplied in Canister)
- ☐ AEM Mower Safety Manual (Supplied in Canister)
- ☐ **AEM Mower Safety Video has been shown to Purchaser** _____ Pur. Intitials
- ☐ **AEM Mower Safety Video has been presented to Purchaser** _____ Pur. Intitials

Purchaser's Signature _____ **Date** _____ **Dealer's Signature** _____ **Date** _____

TEAR • TEAR • TEAR •

1. PRINT FIRMLY. 2. REMOVE WHITE COPY FOR CUSTOMER RECORDS. 3. REMOVE YELLOW COPY FOR DEALERS RECORDS. 4. MAIL LAST CARD POSTAGE FREE.

SERVIS-RHINO® WARRANTY REGISTRATION INFORMATION

Servis-Rhino Model | Serial No. | Purchase Date (MONTH – DAY – YEAR)

Purchaser Last Name | First Name | M.I.

Street & No., RFD, Box, &/or Apt. No.

City | State or Province | ZIP

Dealer

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DEALER COPY

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CHECK AND ADJUST OR LUBRICATE AS REQUIRED

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MOWER
- ☐ Spindle And Motor Bolts Properly Torqued
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- ☐ Blade Carrier Bolts Properly Torqued / Retaining Pin In Place
- ☐ Mower Cutting Height And Level Adjusted
- ☐ Belt Alignment And Tension Adjusted
- ☐ Driveline Clutch (Torque Limiter) (Adjust And Run In)
- ☐ All Hardware Properly Torqued
- ☐ Tire Air Pressure / Lug Nuts (Correct Torque)
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ATTACHMENTS & INSTALLATION
- ☐ Thrown Object Deflectors Front And Rear
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